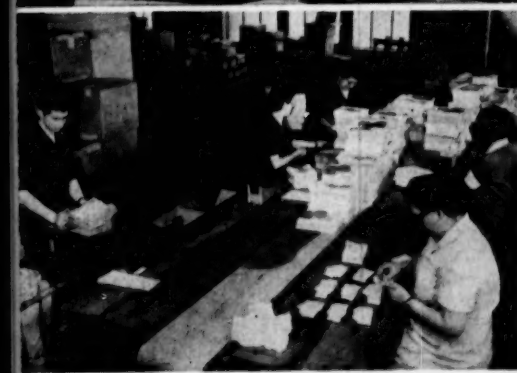


Chemical Week

March 12, 1955



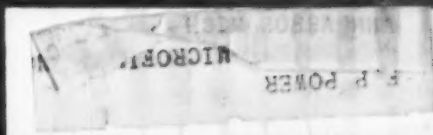
► The Salt Lake area, treasure of raw materials, beckons chemical industry p. 18

Equipment to the man—not the man; that's the uprending concept p. 44

Can you sell your product via circuit TV? Many firms are doing it p. 57

Org. synthesis can make more new chemicals than researchers yet know how to use p. 66

► 'Box top and 25¢' can bolster specialties sales; here are the premium hows and whys . p. 90





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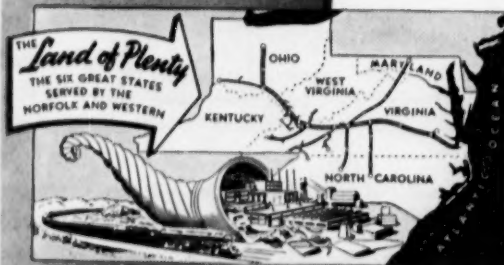


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Chemical Week

Volume 76

MARCH 12, 1955

Number 11

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Who's First?

TO THE EDITOR: In your excellent news article on dry bleaches (Jan. 15, p. 56) in which you outline the rather sweeping changes taking place in the field, you gave credit to Sage Laboratories for starting the trend to perborate bleaches.

It so happens that Dexol was introduced and widely marketed by our company (then Perfex Mfg. Co.) in 1949, whereas Snowy did not enter the field until over a year later and Sage in 1951.

We were also interested to note that out of the reported \$6.25 million powdered bleaches sales for 1953, Dexol accounted for \$2.5 million . . .

J. C. RAPP
President,

Tidy House Products Co.
Shenandoah, Iowa.

It's difficult, if not impossible, to precisely pinpoint a "first," because there can be many "firsts"—first to test-market, first to sell nationally, first to include perborate in a bleach, first to feature perborate in advertising, etc. That's why, rather than actually designating anyone as "first" we merely said—although we'll admit that it does carry a suggestion of one "first"—Sage unwrapped this powder with its Safety Bleach in 1951.

This is the order, however, in which various concerns expressed a concrete interest in perborate bleaches: Chatham Laboratories, Perfex, Gold Seal, Vano, Sage. Varying times elapsed between then and marketing.—Ed.

Ultrasonics' Future

TO THE EDITOR: We have read with a great deal of interest your news article on ultrasonics, "Still Basically Sound" (Feb. 12, p. 52) . . . and by virtue of our prominence as a manufacturer of ultrasonic cleaners and our early and continuing research into the use of magnetostrictive materials . . . we feel qualified to submit a few comments . . .

We heartily concur with your expression of opinion that premature enthusiasm characterized, in large measure, early development of ultrasonic applications. We, however, will not admit that, except for a few mechanical devices already in use, standard commercial equipment may take two to ten years to develop. Any

research program dealing with a new tool—such as ultrasonics—may be expected to continue indefinitely. Applied to this interpretation, your assumption would be proper. But we feel that you have rendered some disservice to ultrasonics by failing to acknowledge that there are more than a few systems already in use . . . and that during the period of continuing research interim systems will be produced as acceptable tools . . .

It is somewhat akin to a man delaying for ten years the purchase of an item that, effective though it may be, has not achieved its ultimate development.

We are confused by your statement that implies that ultrasonic systems operating up to 100 kilocycles are mechanical devices. Another comment suggests that the range from 40 to 400 kilocycles is best handled by electrical generation. . . . If we restrict our discussion to the range up to 40 kilocycles there is the broad implication that systems within this range are a mechanical device driven by sirens or whistles. By this implication, and your discussion of quartz and barium titanate crystals, you have effectively dismissed magnetostrictive materials as a source of ultrasonic energy . . .

We have done a great deal of foresighted work in this field . . . there are advantages and disadvantages inherent in the utilization of either quartz, barium titanate or magnetostrictive materials. Our interest includes all three types even though our commercial product employs magnetostrictive materials . . .

We are quite willing to agree that one of the factors limiting, at the present time, more widespread use of ultrasonic energy is the relatively high cost of suitable generators. But the manufacturer who estimated for you that such equipment costs \$4-5/watt is somewhat in error. . . . Our own experience proves that this is not the case. . . .

R. L. LOWRY
Assistant Sales Manager
Ultrasonic Products
Pioneer-Central Division,
Bendix Aviation Corp.
Davenport, Iowa.

CW appreciates Reader Lowry's comments on the future of ultrasonics. However, we certainly did not intend

to disparage magnetostrictive devices. Our article was, as Reader Lowry points out, concerned with the 40- to 400-kilocycle range—the most attractive one for chemical processing. We mentioned piezoelectric generators because they cover that entire range.—Ed.

International Interest

TO THE EDITOR: In your Jan. 29 issue you ran a brief item about the formation of our consortium and said that it had been organized "to invite foreign bids for delivery and installation of chemical plants in Belgium."

We should like to note that our interest is not only in chemical plants in Belgium but also in industrial plants and utilities and in foreign countries as well . . .

CH. LAVAL
Technical Director
Syndicat Belge d'Enterprises
à l'Étranger
("Sybetra")
Brussels, Belgium

Man-Made Diamonds

TO THE EDITOR: Your Newsletter (Feb. 19) mentioning General Electric's production of synthetic diamonds brings to mind a book that was given me for Christmas by an uncle who believed in getting boys interested in science. It was titled "Electricity of Today"—the author, Charles R. Gibson, and the publisher, J. B. Lippincott Co., 1907. My son has this book and a picture is shown of two scientists pouring a molten mass of iron containing graphite into a lead bath. Presumably the temperature differential between 5000° electric furnace heat and 400 to 500° melting point of lead causes a sudden drop in temperature with resultant immediate crystallization and tremendous pressures. . . .

According to the account, the iron was later dissolved with acid and the

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

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OPINION

diamonds recovered. Obviously this was a laboratory experiment and is in no way to be compared with General Electric's work. However, you will note the idea was interesting in 1907. . . .

H. L. DAHM
St. Louis, Mo.

Interesting, indeed. Moissan, and many other experimenters, believed they had made microscopic diamonds by crystallizing carbon out of molten metal. (Carbon, however, has a perverse tendency to crystallize out as graphite.) Their observations have never been authenticated and it is doubtful that they really achieved their goal.—ED.

DATES AHEAD . . .

Commercial Chemical Development Assn., "Public Relations in New Product Development" meeting, Statler Hotel, New York, March 17.

Fourth Annual Water Symposium, Louisiana State University, Baton Rouge, March 22-23.

National Farm Chemurgic Council, annual chemurgic conference, Deshler-Hilton Hotel, Columbus, O., March 22-24.

National Industrial Conference Board, marketing conference, Shamrock Hotel, Houston, March 24.

World Plastics Fair and Trade Exposition, National Guard Armory, Los Angeles, April 6-10.

American Drug Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 13-14.

Conference on Biological Waste Treatment, Manhattan College, New York, April 13-15.

The American Oil Chemists' Society, annual meeting, Roosevelt Hotel, New Orleans, April 18-20.

American Institute of Chemical Engineers, national meeting, Shamrock Hotel, Houston, May 1-4.

American Pharmaceutical Assn., annual convention, Miami Beach, Fla., May 1-6.

Society of the Plastics Industry, annual meeting and conference, cruise on the Queen of Bermuda, May 7-15.

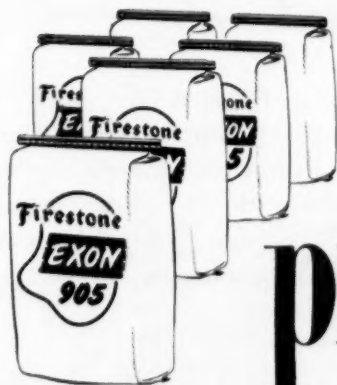
American Institute of Chemists, annual meeting, Chicago, May 11-13.

Chemical Specialties Manufacturers Assn., midyear meeting, Drake Hotel, Chicago, May 15-17.

Chemical Progress Week, May 16-21.

Chemical Week • March 12, 1955

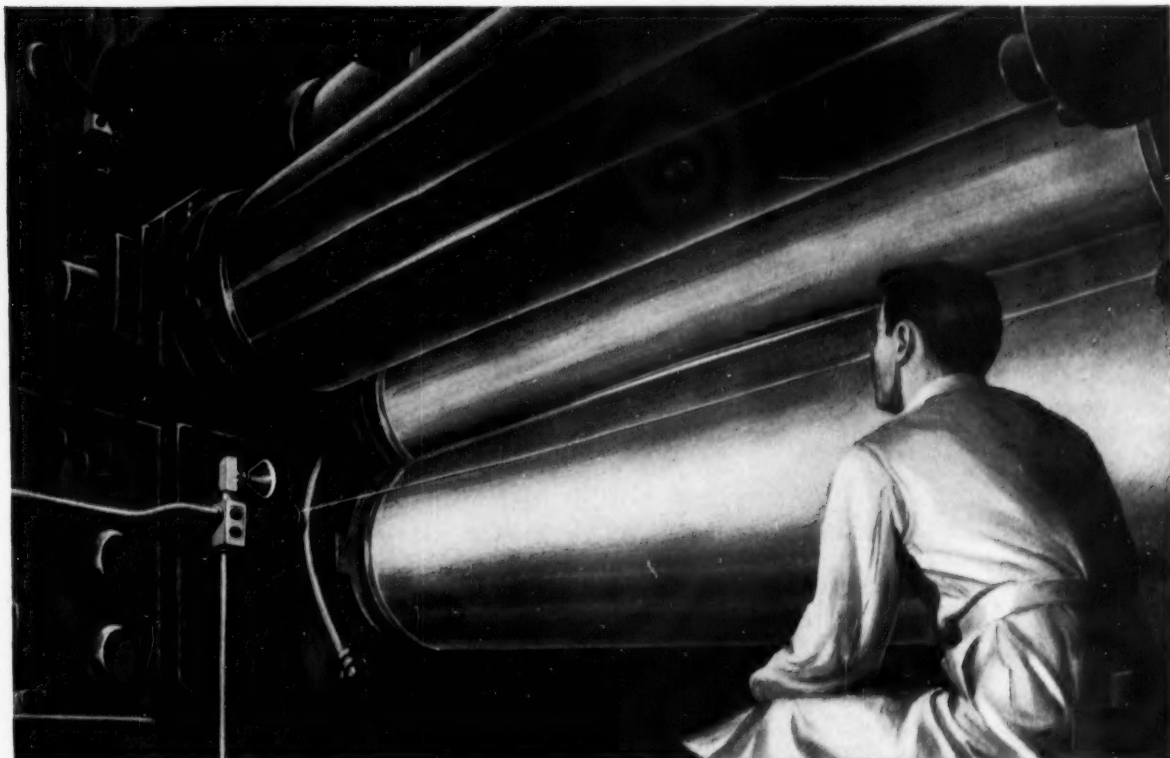
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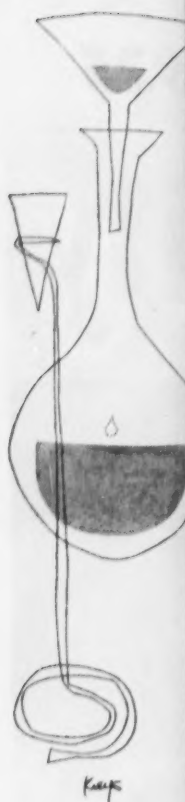
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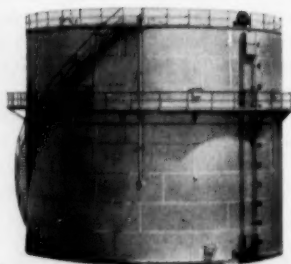


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NEWSLETTER

Booming business ahead? The automotive industry is not only a big customer of the chemical process industries; it's also a sensitive gauge of the national economy. In this light, General Motors President Harlowe Curtice's remarks late last week take on special significance. He said, "Our dealers are clamoring for cars at a rate faster than we can produce them. We are establishing production and retail sales records daily, weekly and monthly." He also said that GM is approaching the spring selling season with "an abnormally low stock of cars," predicted that 1955 could be the biggest passenger car sales year in automotive history.

•
Firms that built methanol or glycerine plants despite being denied fast tax write-offs may get retroactive certificates. Although enough certificates were issued to meet the government's expansion goals, mobilizers have extended the deadline six months to July 1 in order to transfer unused certificates to companies that applied and were turned down.

Not so on three other expansion goals that had not been formally closed. No new certificates will be issued, nor old ones switched, on formaldehyde, toluene, or pentaerythritol.

•
In its second finding in a week, the Tariff Commission saw no injury to domestic producers from cut-price potassium muriate imports. The commission split 3-3 on East German material (*CW Newsletter*, March 5), was unanimous in exonerating West German and French imports.

•
Taking direct aim at the chemical industry, the Committee on Foreign Trade Education this week loosed full-page blasts in Washington, D.C., newspapers. Some excerpts:

"'Defense essentiality' is the anvil on which President Eisenhower's proposals for expanding trade are to be beaten out of shape. Riding right in on . . . 'defense essentiality' is the chemical industry. . . . They are not only against . . . modest reform of . . . reciprocal trade . . . but . . . also 'call for the removal of (past) tariff concessions . . .'

"What's being threatened? Why, only a puny little industry made up of Du Ponts, Monsanto, Dows, etc., that has grown 10% per year for the last 25 years . . . About the 'vital' synthetic organic chemicals . . . : The domestic industry produces \$4 billions' worth each year. The amount imported in 1953 was \$50 millions. According to the U.S. Tariff Commission, only \$5.8 millions of these imports, or less than 1/2 of 1%, were 'competitive.'"

•
For long-litigated General Aniline & Film, there's a glimmer of light at the end of a 13-year-long tunnel. President Eisenhower will back legislation, already submitted to the House, permitting sale to private investors of stock in the \$100-million government-vested firm. (The bill further provides that former owners cannot regain control of the firm's physical assets.) Passage of the bill would cut across the tangle of litigation between the Dept. of Justice and the Swiss holding company, I. G. Chemie.; proceeds of the GAF sale would be held in escrow pending final settlement of the court case.

Consider how the trend toward color may affect your business. Appliance makers are getting away from the traditional white, are stressing "living room" colors for ranges, refrigerators, cabinets, appliances. The effect on pigment makers is obvious, of course; but less obvious are the changes that will likely be made in coating formulations and the like to accommodate the trend.

And the kitchen's not the only place. It won't be long before you'll be seeing tires to match automobile body colors. If the idea catches on, it will throw open a wide market for pigments.

•

Commercial Solvents will participate heavily in Northwest Nitro-Chemicals, Ltd., the ammonia and phosphate fertilizer firm being established in southern Alberta. Associated with Commercial Solvents—which will be engineering consultant on the project and also operate the plant under a long-term management contract—are New British Dominion Oil, which will supply much of the natural gas; Ford, Bacon & Davis, prime contractor for the project; and Frank McMahon.

•

After 11 months of negotiation, Shell Oil Co. has shelved plans for its Ventura, Calif., water reclamation plant. Difficulties over site acquisition and indecision on the proposed Bureau of Reclamation dam for the area are reported responsible for the indefinite suspension of the project. A cooperative venture of Shell and the city of Ventura, the plant was designed to supply the company's ammonia and natural gasoline plants with 2 million gal./day of fresh water recovered from sewage.

•

Pushing hard on polyurethane is Dayton Rubber, which before the end of the year will quintuple its capacity—from 2 million to at least 10 million lbs./year. Current capacity is owned by a subsidiary firm, American Latex Products (Hawthorne, Calif.), but the additional facilities will be built and operated by the parent company, which operates under Monsanto, Du Pont and Lockheed licenses.

•

Now it's the Oil, Chemical and Atomic Workers International Workers (CIO). It came into being late last week as a result of the oil and chemical unions' merger (*see p. 15*). The old oil union had 8 director districts; the chemical workers, 12. The new union has redivided the country into 15 districts, and Canada is the 16th.

The union brags that merger was accomplished without a convention-floor fight; and the joint constitution committee issued no minority reports while it was in existence.

•

A problem until now: killing nematodes without killing the plants they infest. Heretofore the usual chemical treatment has been soil fumigation—which has to be done before the planting because the fumigants kill the plants. Now Virginia-Carolina Chemical has developed O-2,4-dichlorophenyl-O,O-diethyl phosphorothioate (V-C 13 Nemacide), available as a 75% emulsifiable concentrate, which is already registered in Virginia and Florida for use on turf and ornamental plantings. In field tests on golf greens, nematode control has been achieved with 125-250 lbs./acre.

Virginia-Carolina is now awaiting Food & Drug Administration clearance of the product for use on citrus and truck crops.

... The Editors

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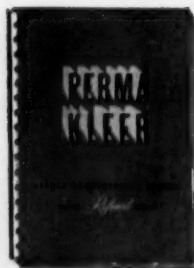
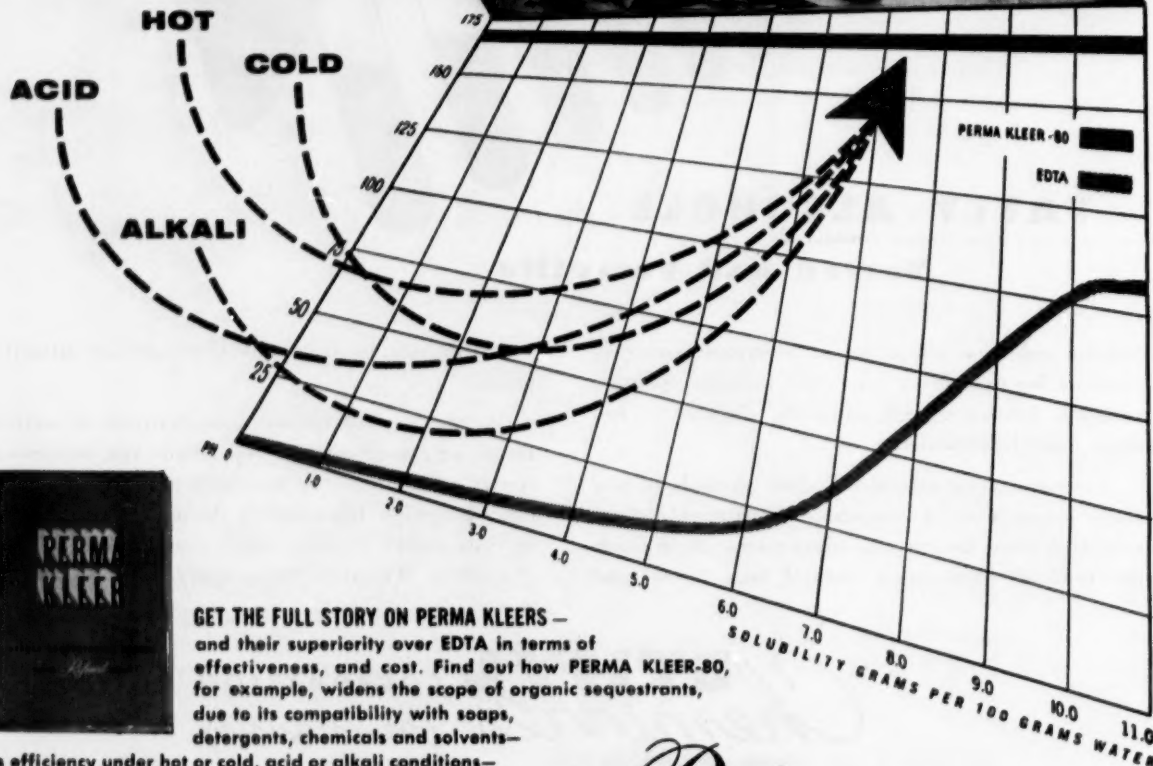
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INDUSTRIAL DIVISION REPRESENTATIVES

New England: AMERICAN CHEMICAL & SOLVENT CO., 15 Westminster St., Providence 3, R. I.
Midwestern: UEBEL CHEMICAL CO., 410 N. Michigan Ave., Chicago 11, Illinois
Midwestern (Detroit Area): R. A. WILLIHNGANZ, 205 East Ann St., Ann Arbor, Michigan
Southwestern: RELIANCE CHEMICALS CORP., 2437 1/2 University Blvd., Houston 9, Texas
Salt Lake City: NYLON-KOBURN CHEMICALS INC., 226 W. 3rd South St., Salt Lake City 1, Utah
So. California: CHEMICAL-ADDITIVES CO., 3155 Leona Boulevard, Vernon 56, California
No. California: WILLIAM C. LOUGHLIN & CO., 311 California St., San Francisco 4, Calif.

BUSINESS & INDUSTRY . . .

CHEMICAL COMPANY EARNINGS

(in dollars; 000 omitted)

	Sales			Pretax Earnings			Net Earnings		
	1954	1953	% Change	1954	1953	% Change	1954	1953	% Change
Air Reduction	123,315	131,412	-6.1	12,937	13,764	-6.0	6,337	6,766	-6.3
Allied Chemical	530,776	545,560	-2.7	71,386	82,450	-13.4	43,071	45,171	-4.6
American Agricultural*	67,398	62,002	8.7	8,080	7,868	2.7	4,470	3,818	17.1
American Cyanamid	397,000	380,000	4.4	51,050	52,472	-2.7	27,050	27,472	-1.5
American Potash	23,631	22,461	5.2	3,540	2,891	22.4	2,510	2,116	18.6
Atlas Powder	57,647	58,788	-1.9	5,707	5,588	2.1	2,643	2,231	18.5
Commercial Solvents	51,608	51,310	0.6	5,011	4,982	0.5	2,668	2,656	0.4
Dow Chemical**	428,255	430,385	-0.5	57,825	86,557	-33.2	33,425	35,857	-6.8
Du Pont ⁽¹⁾	1,690,000	1,765,000	-4.2	700,000	751,240	-6.8	345,000	235,565	46.4
Freeport Sulphur	57,344	48,554	18.1	13,405	10,786	24.2	10,084	8,536	18.1
W. R. Grace ⁽¹⁾	410,000	296,027	38.5	26,600	19,425	36.4	14,600	10,959	33.4
Hercules	187,547	190,202	-1.4	31,217	31,338	-0.4	14,140	11,680	21.0
Hooker***	44,567	38,693	15.2	8,449	7,317	15.5	4,169	3,378	23.4
Inter. Minerals*	95,079	90,960	4.5	6,838	9,968	-31.4	5,832	7,527	-22.5
Merck	145,400	160,002	-9.1	26,200	24,689	6.1	12,600	11,389	10.6
Monsanto	341,823	340,617	0.4	42,555	49,445	-13.9	23,701	26,385	-10.2
Olin Mathieson	468,000	463,000	1.0				35,343	31,843	11.0
Parke, Davis	109,936	109,852	0.0	19,093	17,744	7.6	10,493	9,344	12.3
Pennsalt	58,124	59,211	-1.8	6,201	6,393	-3.0	3,390	3,106	9.1
Chas. Pfizer	145,200	127,003	14.3	22,901	25,860	-11.4	15,200	14,100	7.8
Pittsburgh Coke	35,667	52,212	-31.7	1,995	6,030	-61.8	1,084	2,855	-62.1
Rohm & Haas	132,615	120,676	9.9	27,906	19,538	43.3	12,431	6,540	90.0
Spencer*	33,851	32,468	4.2	9,528	11,621	-18.0	4,718	5,043	-6.4
Texas Gulf Sulphur	84,551	78,283	8.0	46,245	40,284	14.8	30,545	24,534	24.6
Union Carbide	946,174	1,048,157	-9.7	172,129	227,760	-24.4	89,779	102,783	-12.7
Victor	43,325	42,675	1.5	7,217	7,387	-2.3	3,667	3,187	15.1

* Fiscal year ends June 30.

** Fiscal year ends May 31.

*** Fiscal year ends Nov. 30.

(1) Du Pont and Grace figures for 1954 are estimates.

Profits Rising, Reasons Varied

Most chemical companies registered higher profits in 1954. Reasons: decreased taxes, expanded production, good fourth quarter.

Consensus on the '55 outlook: continuing—though decelerating—growth.

Promising is the keynote word for the profits outlook in 1955. Most chemical executives talking to stockholders next month will report increased sales, rising profits at year's end; many will optimistically predict all-time record-shattering profits for '55.

Reasons are many, but in general the spirit of satisfaction over business conditions centers around this fact: for the first time in several years chemical men feel that their sales are not supported by any artificial props. Expansion costs are leveling off; depreciation programs are solidified; the industry is settling down to what

seems to be a "period of normalcy."

Looking back at last year's records, many companies are especially pleased. Texas Gulf Sulphur, for example, turned in all-time-high earnings (before and after taxes) in 1954. Reason: the company's integration program is virtually completed; there's a resultant dollar saving in costs.

Du Pont's increased earnings (earnings per share jumped from \$4.94 to \$7.33 in the space of one year) is due largely to the expiration of excess profits taxes. Spencer's rise (record sales) is credited to increased production (chiefly at Vicksburg, Miss.).

Atlas was another company aided by the drop in excess profits taxes: though its sales dropped 2%, net profits rose 18%.

Allied's earnings were down somewhat because of increased provision for amortization of facilities covered by certificates of necessity, but the "outlook's bright for '55."

And Carbide's decline (in both sales and net) can be attributed mainly to a 26% drop in ferro-alloy sales due to curtailed operation in the steel industry. But sales of plastics and alloys were increasing in the fourth quarter of the year, are reportedly continuing at a \$1-billion rate today.

That spells a fine forecast message from a cross-section of the industry—one that indicates a far healthier state of business than even the most optimistic prognosticators were envisioning scarcely a year ago.

Highlights of Administration's Antitrust Review

MERGERS

- Law should be applied to slow any appreciable growth toward monopoly by even relatively minor acquisitions.
- Government should weigh a merger's actual (or possible) effect on competition in relation to a well-defined market.

PATENTS

- Package licensing should be illegal if licensor refuses to license less than the complete package.
- Tying-in clauses are not necessarily illegal "contrary to apparent trend" of Supreme Court decisions.
- Patent interchanges should be legal if that is the only way to get commercial use of a patent.
- Court decisions ordering compulsory licensing at reasonable rates should be approved.
- Patent owner should be liable for treble damages if he files an infringement suit in bad faith to protect a patent used in violation of the law.

EXEMPTIONS

- Government should be given power to proceed against labor union activities aimed directly at market control.

FOREIGN COMMERCE

- Companies doing business abroad should be considered antitrust targets, but should be given a fair chance to vindicate themselves.

DISTRIBUTION

- Good faith should be approved as a proper defense for companies charged with price discrimination when they meet a competitor's lower price to a customer.
- Justice Dept.'s opposition to 'fair trade' should be upheld.
- Legality of delivered pricing if not established in conjunction with competitors should be supported; conscious parallel action in setting prices should not necessarily be considered a form of conspiracy.
- Trend in courts (and FTC) to uphold rule of reason in reference to exclusive dealing and requirement contracts should be maintained; per se rule of illegality concerning tie-in contracts should be backed.

ENFORCEMENT

- Attorney General should be given new kind of investigative power to prepare civil antitrust cases—a "civil investigative demand" requiring production of documents and business records.
- Criminal fine for violation of Sherman Antitrust Act should be boosted from \$5000 to \$10,000.
- Increased use should be made of procedure to settle cases before they are filed.
- No expansion or relaxation of existing advance program in Justice Dept. should be permitted.
- Government should be given the right to collect actual damages suffered because of antitrust violations.
- Trial judges should be given discretion to award less than present mandatory treble damages in private antitrust suits; a four-year statute of limitations should be passed.

Milder than Expected

The long-awaited report by the Administration's special Antitrust Committee is about to make history.

Product of more than a year's work by 60 top antitrust lawyers, professors and economists, the 347-page report is the first government-sponsored review of decades of antitrust law and Supreme Court decisions.

Its appearance will, in one sense, cause many chemical executives to draw a long breath of relief. Instead of indicting current antitrust policies outright, the report generally applauds the record, reflects basic agreement with much of what the Justice Dept. and Federal Trade Commission have been trying to do. Sprinkled here and

there are recommendations for certain changes in the law (which can be counted on to form major planks in Attorney General Brownell's promised year of emphasis on antitrust matters), but on the whole, the report's tenor is remarkably mild.

For example, on mergers, one of the findings—that the law should be construed to slow appreciable growth toward monopoly "by even relatively minor acquisitions"—falls right in line with a recent case filed by the Justice Dept.'s antitrust chief Stanley Barnes to divest Schenley Industries—which had 17% of the industry's sales—of its ownership of Park and Tilford—which accounted for 2% of industry sales.

On the recent Justice Dept. attempt to negotiate a settlement before it's filed in court, the committee report is openly enthusiastic. This plainly underwrites the government's handling of the recent Eastman Kodak Color Film Case, which was worked out between conflicting parties before any suit was filed.

But absolutely no encouragement is offered to suggestions that, because of the uncertainty and complexity of the antitrust laws, the Justice Dept. should expand its procedures for giving advance clearance that certain conduct is legal. While okaying the practice of looking at proposed mergers and giving an opinion, the committee rejects any effort at easing up on present strictures against giving out opinions on legality.



AT UNION MERGER MEETING: Presidents Swisher, Knight check badges (left); Ruether's aide, Leonard proclaims . . .

Unity for Strength

Like painstaking bricklayers, more than 900 CIO unionists worked all last week in Cleveland's block-square public auditorium to put together a big new labor union likely to be known as the Oil and Chemical Workers International Union.

The bricks were troweled into place slowly but steadily; and there was no hint that the structure would not be completed and occupied. But the delegates—about 450 from locals of the Oil Workers International Union and nearly 500 from the United Gas, Coke and Chemical workers—refused to be stampeded into any rush job of okaying the proposed constitution their officers had prefabricated for them.

Instead, they took their time in thrashing out numerous changes suggested by members of both unions; and whenever wording didn't suit them, they didn't hesitate to send the proposition back to committee.

Reuther's Prescription: But despite its unhurried pace, there were many early indications as to just what kind of union would emerge from the deliberations to confront oil and chemical producers. For one thing, there was the call to arms sounded by CIO President Walter Reuther, godfather to the newborn union. Reuther wasn't able to fulfill his engagement as keynote speaker at the convention, but from a sickbed in Washington sent word urging delegates to back mergers

to the hilt. His arguments:

- "In the industries in which you operate, you face the great giants of American business—companies like Du Pont and Union Carbide, Standard of New Jersey and the Texas Co. You must be strong; you must be united; you must be firm if you are going to win the crucial economic battles that lie ahead."

- "You can't be fully united, really strong, until you organize the hundreds of thousands of workers who need the benefits of a labor union. So long as big segments of these industries remain unorganized*, they remain a serious threat to your economic well-being."

Fiscal Aid Promised: Reuther not only told the Oil and Chemical workers what he thinks they should do; he also promised to help them do it. He told the delegates—through CIO Presidential Assistant Richard Leonard whom Reuther had named to serve as impartial chairman at the joint merger convention—that Reuther's own United Auto Workers would ante up financial contributions for oil and chemical organizing.

Further clues to the nature of the new union could be seen in some of the resolutions adopted—all by virtually unanimous vote:

* It's to be noted that many of the oil and chemical workers whom Reuther regards as "unorganized" are actually members of independent unions.



NO RAILROADING: From oil-chemical delegates, point-by-point debate.

- Assuring that the new union intends to cooperate fully in future CIO programs and policies.

- Favoring participation in worldwide oil and chemical trade union bodies.

- Urging enactment of fair employment practice laws on state and national levels.

- Recommending improved and uniform workmen's compensation laws in all states.

- Advocating expansion of present social security programs, higher benefits under state unemployment insurance, and national prepaid health insurance.

- Proposing that the \$20 income tax reduction plan—passed last week

by the House of Representatives but opposed by President Eisenhower and the Senate Finance Committee—should be made effective as of last Jan. 1 instead of next Jan. 1 or later.

Shock Troops Coming: Thus it appears that the new Oil and Chemical union—emboldened by the sudden buildup in numerical strength and with greater financial resources than the combined totals of both predecessor unions—will be even more militant, harder driving, and more “New Dealish” than either of its two union forebears. And still more reinforcements are in store: the AFL’s International Chemical Workers Union—which sent “unofficial observers” to the Cleveland sessions—is due to be blended into the Oil-Chemical combine after the forthcoming AFL-CIO merger.

COMPANIES.

Mutual Chemical Co. of America, a wholly owned subsidiary of Allied Chemical & Dye Corp. since Aug. '54, became an operating division of Allied as of March 1. In toto, Allied’s major operating divisions now number seven.

More company incorporations:

- In Columbia, S. C., C. H. Patrick & Company, Inc., capital stock, \$25,000.
- In Dover, Del., Retzloff Chemical Co., capital stock, \$75,000; Crestwood Chemical Co., capital stock, \$1000; Humble Sulphur Co., capital stock, \$1000.

Du Pont Co. has renewed its options on an 800-acre tract in Mason County, Ky., until May 1. The plot lies on the Chesapeake & Ohio Railroad, between Lake Charles and the Ohio River.

Bell & Gossett Co. (Morton Grove, Ill.) has acquired John E. Schulze & Sons, Inc. (Chicago) originators of the Schulze high-vacuum distillation processes. The company’s acquired plant can now handle up to 30 tons of crude material daily (fatty and rosin acids), is in the process of expanding operating units to a rate of 60 tons/day.

Illinois Zinc Co. will present a proposal for amalgamation with Canadian Javelin, Ltd. and Boon-Strachan Co., Ltd. (both of Montreal) as soon as

stockholder meetings can be set. Under current plans, Illinois Zinc would acquire all assets of the Canadian companies in return for common stock.

Name of the proposed merged company: Illinois International Iron & Zinc Corp.

EXPANSION

Ammonia: Rumored cancellation of plans to build a \$12-million ammonia plant at Pasco, Wash., has been denied by Columbia River Chemicals. Preliminary work has already been started at the plant site; Fluor Corp. of Los Angeles is going ahead with engineering and construction blueprints. Estimated date of completion: mid-1956.

Fertilizer: Standard Oil of California has started work on a \$16-million fertilizer expansion program. First unit scheduled for completion: an ammonia-nitric acid plant at Richmond, Calif., planned to take advantage of

by-product hydrogen from nearby oil refineries. Second in line of construction: a fertilizer plant (to be built by California Spray-Chemical Corp., a Standard subsidiary). Ammonia capacity is listed 300 tons/day; all facilities should be in operation by mid-1956.

Char Products: Cotarco, Inc., will build a low-temperature coal carbonization plant in Colorado to process 8520 tons of bituminous coal daily. Company officials (Cotarco is a subsidiary of Resources International Corp., New York) say six sites are currently under study for the \$11.5-million plant; estimated production includes 5930 tons of char products, 67 tons of sulfur daily.

Pulp: First contracts were awarded last week for construction of a \$1-million addition to Coos Bay Pulp Corp.’s Anacortes, Wash., plant. New installations will include a unit to prepare cordwood for use in sulfite pulp manufacture.



It Could Happen Here

SPEAKING to conferees at the First International Congress on Air Pollution in New York last week, Sir Hugh Beaver (one of Britain’s chief advocates of clean air) warned U. S. industrialists that un-

less they smarten up on voluntary pollution control, they’ll soon find themselves (like Britons) facing strict legislation. Britain’s present goal: to reduce smog 80% in 10-15 years.

WHEN IT'S METHANOL

BUY FROM CARBIDE

because

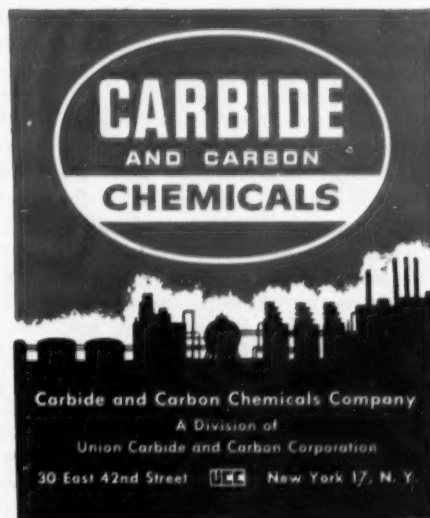
- Added production now makes methanol available in any quantity
- Bulk Stations are strategically located for the convenience of large industrial users
- There are warehousing facilities in 45 different locations from coast to coast for the service of those who purchase in LCL quantities
- Representatives are situated in 25 offices in principal cities to lend you technical assistance



Methanol serves a vital part in many industrial operations. Its important uses are:

- * Intermediate for formaldehyde and methyl chloride
- * Fuel for heating insulated railroad cars
- * Anti-freeze for gasoline
- * Component of special fuels for aircraft, racing cars, and motorboats
- * Solvent for vinyl acetate adhesives, surface coatings, and inks
- * And to prevent the formation of hydrates in utility and natural gas lines

For additional information ask the CARBIDE office nearest you for the technical information sheet on Methanol. Ask for F-8141. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Toronto.



MADE OR MINED IN UTAH

Acetylene	Coal	Granite	Natural gas	Sandstone
Ammonia*	Coal resins	Gypsum	Natural gasoline	Shale oil
Ammonium sulfate	Coal tar	Helium	Onyx	Silica
Animal oils	Cobalt	Hydrogen	Oxygen	Silver
Antimony	Coke	Iron	Ozocerite	Soda ash
Arsenic	Copper	Kaolin	Perlite	Sodium sulfate
Asphalt	Creosote	Lead	Petroleum products**	Steel
Beet sugar	Diatomaceous earth	Lime	Phosphates	Sulfur
Bentonite	Dolomite	Limestone	Potash	Sulfuric acid
Benzene	Elaterite	Magnesite	Pumice	Toluene
Bismuth	Explosives	Manganese ores	Quartzite	Travertine
Calcite	Fluorspar	Manganiferous ores	Radium	Tungsten
Carbon dioxide	Fuller's earth	Marble	Rock asphalt	Uranium
Cement	Gilsonite	Mercury	Salt	Vanadium
Clay	Gold	Mica	Sand and gravel	Xylene
		Molybdenum		Zinc

*Production
to begin in '56.

**Including
petroleum wax.

UTAH'S LAVISH LARDER FOR INDUSTRY: With natural resources yielding all these products, Beehive State is nation's...

Ace in Hole for Next Century's Growth

There's more to Utah than the Great Salt Lake, Bonneville speed course, Rainbow Bridge and Zion National Park; its long-range industrial outlook is decidedly bullish.

The state's chemical future—propped by a wealth of mineral resources and by the westward drift of population—will get into gear with start of ammonia production in 1956.

Up to now, the road maps of industry have pretty much written off the sparsely settled state of Utah as a minerals-rich but market-poor mish-mash of mountains, canyons and deserts; but as of this week, those maps seem due for rapid revision.

It now turns out that chemical and metallurgical processing companies and other manufacturing firms are eagerly entering that state along the trails blazed by the Mormons (1847), miners and tourists. So far, Utah's chemical industry employs fewer than 1500 persons, but expansion appears to be the order of the day (see box, p. 22). And forward-looking Utahans are convinced that—industrially speaking—their state holds a guaranteed first mortgage on the future.

Their reasoning runs like this:

- Utah's importance as a source of raw materials is bound to increase as

higher grade, more centrally located deposits elsewhere become depleted.

- Processing of raw materials and export of semifinished products are rising as the trend toward evening out distribution of the country's population and the decentralization of industry makes distance-from-market less important than distance-from-materials.

- With ammonia production starting next year, Utah will have almost every chemical building block for integrated operations.

Lucky Location: It's worth noting that there may be not one but three major nitrogen producers in the state. This will put Utah in a unique position—it will be a state that turns out large quantities of all three principal fertilizer components: nitrogen, phosphorus and potash.

Utah has about 13% of the nation's

phosphate rock reserves; most of Idaho's phosphate deposits—which account for some 43% of the U.S. total—are located near Utah's sulfuric acid center at Garfield. This makes for an economic situation that led to construction of the \$5-million Garfield plant of Western Phosphates, Inc. (a joint venture of Stauffer Chemical, American Smelting & Refining, and Kennecott Copper). With sulfuric acid available by pipeline from Garfield Chemical (at \$15-18/ton) and with vast supplies of phosphate rock in the nearby Utah hinterlands, this company—the largest of the four phosphate makers in Utah—is riding beyond its initial estimates; its pelletized triple superphosphate, for example, is selling as far east as Kansas City.

There's no production of elemental phosphorus in Utah; 5-mill "dump

load" power is generated by Utah Power & Light, but nearly all that has been contracted for by Monsanto for interruptible operation of its two phosphorus furnaces at Montpelier, Idaho. But if the controversial Echo Park Dam is built in western Colorado, it's conceivable that Utah might have enough cheap power for elemental phosphorus production.

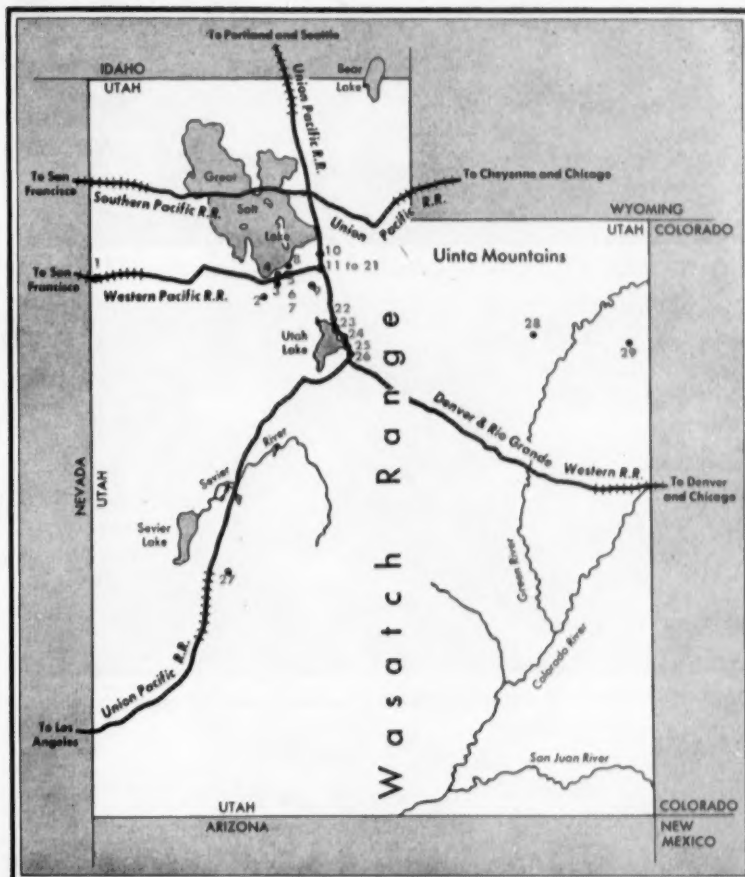
Much Free Fuel: Utah's potash producer—and one of the seven largest in the country—is Bonneville, Ltd., which turns out more than 70,000 tons/year of 75% potash from its 100-sq.-mile operation in the Great Salt Lake Desert, near the Nevada border.

Bonneville is able to beat the high freight rates and the long haul to markets (mainly Midwestern fertilizer manufacturers) only because its practically inexhaustible reserves of brine constitute an extremely cheap raw material, and because solar heat—used each summer in the evaporating ponds—is roughly equivalent to consumption of coal at 5000 tons/day for 300 days. The company is now putting up a storage building to help attune its seasonal production and seasonal sales.

Bonneville is researching the possibility of utilizing the magnesium salt content of its concentrated brine for the refractory trade; but denies that it's working on lithium recovery. Under present circumstances, there seems to be no economic salvation for the thousands of tons of by-product common salt that now go to waste at Bonneville each year.

Surfeit of Salt: Salt, of course, is what Utah has lots of but can't sell much of. Every year, more than a million tons of crystalline salt are laid down in Great Salt Lake; yet, Utah's share of commercial salt production in the U.S. is only about 1%—just a fraction of which goes to the chemical industry. Morton Salt's Royal Crystal Salt Co. is largest of the local producers.

But chemical companies haven't ignored the lake as a mighty salt-cellar. With their present suppliers approaching a limit, Hooker Electrochemical and Pennsylvania Salt of Washington have been looking to Great Salt Lake as a long-range source of crude salt for their plants at Portland and Tacoma, respectively. Their subsidiary, Chemical Salt Production Co., owns 1600 acres of well-situated pan land at the south end of Stansbury



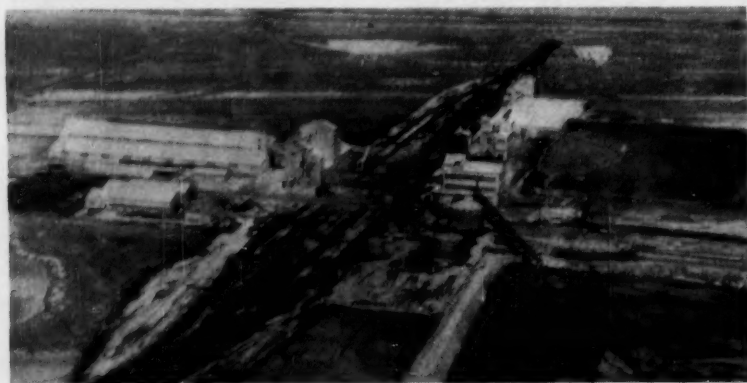
UTAH CHEMICAL PRODUCERS

(Prime products only)

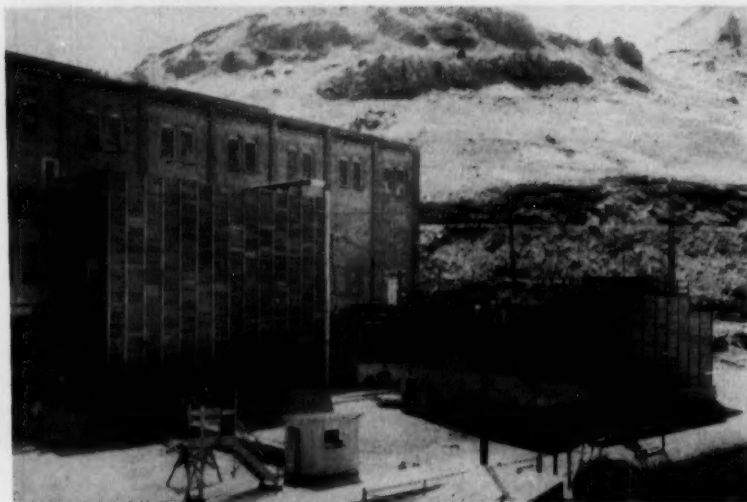
No.	Company	Location	Principal Products
1	Bonneville, Ltd.	Wendover	Potassium chloride
2	Combined Metals Reduction Co.	Bauer	Coal resins
3	Hercules Powder Co.	Bacchus	Industrial explosives
4	Deseret Salt Co.	Lake Point	Salt
5	Western Phosphates Inc.	Garfield	Ammonium phosphate, triple superphosphate, phosphoric acid
6	Garfield Chemical & Mfg. Co.	Garfield	Sulfuric acid
7	Hove Sound Co.	Garfield	Cobalt, ammonium sulfate
8	Royal Crystal Salt Co.	Saltair	Salt
9	U. S. Smelting, Refining & Mining Co.	Midvale	Arsenic trioxide
10	Mineral Fertilizer Co.	North Salt Lake City	Single superphosphate, ammoniated single superphosphate
11	Bennett Glass & Paint Co.	Salt Lake City	Alkyd resins
12	Carbo Chemical Co.	"	Carbon dioxide
13	Carbon Dioxide & Chemical Co.	"	Carbon dioxide
14	Chemopharm Corp.	"	Alkaloids
15	Filtrol Corp.	"	Clay cracking catalysts
16	Linde Air Products Co.	"	Acetylene, nitrogen, oxygen
17	National Cylinder Gas Co.	"	Acetylene, nitrogen, oxygen
18	Utah Lime & Stone Co.	"	Calcium oxide
19	Vitro Corp.	"	Uranium, tungsten, vanadium
20	Whitmore Chemical Co.	"	Acetylene
21	Whitmore Oxygen Co.	"	Hydrogen, nitrogen, oxygen
22	General Food & Chemical Co.	Pleasant Grove	Single superphosphate
23	Columbia-Geneva Steel Corp.	Geneva	Ammonium sulfate, coal-tar chemicals
24	Republic Cresseting Co.	Provo	Cresote, cresylic acids, phenol
25	Columbia-Geneva Steel Corp.	Ironton	Ammonium sulfate, coal-tar chemicals
26	Illinois Powder Mfg. Co.	Springville	Industrial explosives
27	American Sulphur & Refining Co.	Sulphurdale	Sulfur
28	C. S. Zigler Co.	Myton	Gilsonite
29	American Gilsonite Co.	Bonanza	Gilsonite



UTAH'S GREAT SALT LAKE: In dense solution, some 6.5 billion tons of salts. WIDE WORLD



BIGGEST PHOSPHATE PRODUCER: Near sulfuric source, Western Phosphates. UNITED AERIAL SURVEY



SOLE SULFURIC MAKER: With by-product sulfur, Garfield's capacity up 375%.

Island (which is now a peninsula).

Chemical Salt is asking the Interstate Commerce Commission for a \$6.35/ton rate for rail shipment of crude salt to Tacoma, and is trying to persuade the Utah State Land Board to levy on production of crude salt a royalty of only 5¢/ton. So far, the board has insisted on collection of the same 10¢ fee it charges for table-grade salt. If successful on these two counts, Chemical Salt hopes to be able

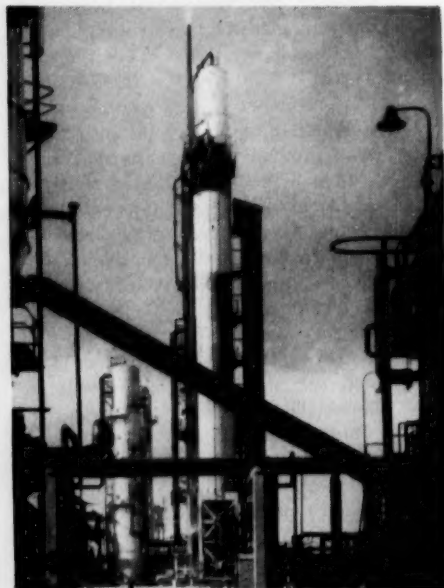
to unload crude salt in Tacoma at \$8/ton. Newly formed Deseret Salt Co. also has an eye on the Pacific Northwest market.

Metals' By-Products: The state's sole producer of sulfuric acid is Garfield Chemical & Mfg., whose parent companies are American Smelting & Refining and Kennecott Copper. Its capacity has increased from 200 tons/day in 1942 to 750 tons/day—all a by-product of copper smelting. Back

B & I



GILSONITE MINING: For 'frozen oil,' possible use as new coking material.



SALT LAKE REFINERY: In current trend, more processing 'at home.' JOHN CROFTS, SALT LAKE CITY

in 1940, the market for this acid was largely on the Pacific Coast; now most of it is sold in the Intermountain West.

It looks as though U.S. Steel's Chemicals Division—actually a late comer in the ammonia picture—will be first nitrogen producer in the state; its ammonia-from-coke-oven-gas plant will be the first of its kind in the country. The other two contenders (*see box, p. 22*), who are planning to base their production on natural gas,

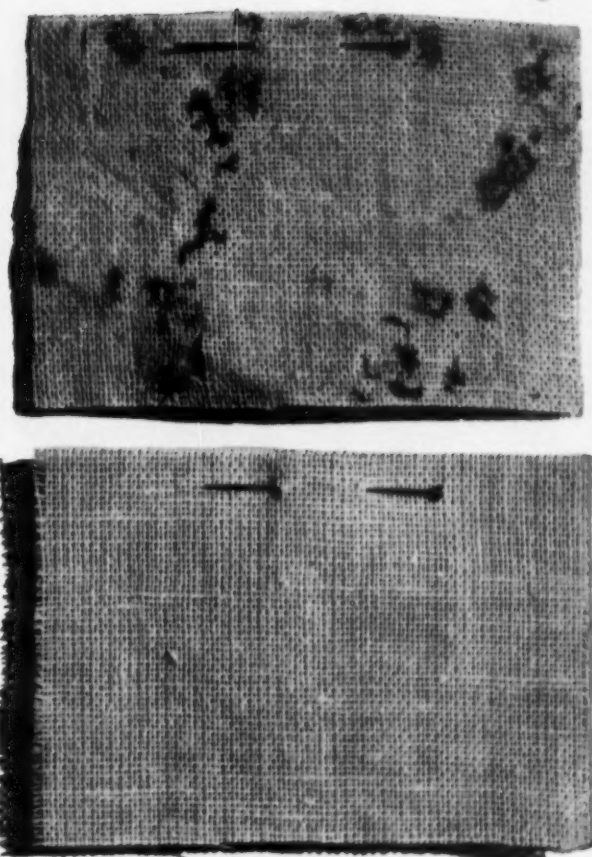


Dowicide Preservatives

protect grey goods and
finished textiles
against mildew

*Liquid starch size containing
Dowicide Preservative
guards cloth fibers from discoloration
and structure-weakening mold growth*

*Bolts of grey goods and finished textiles can be stored far
longer without suffering costly damage from mold destruction.*



DOWICIDE® PRESERVATIVES make the difference so obvious here. These two grey goods samples are identical in all but *one* respect: sample at *top*, above, is sized with *unpreserved* starch; piece *below* is warp-sized with liquid starch containing a Dowicide Preservative. Samples were exposed for equal time to conditions favoring mold growth. Piece with *untreated* size is discolored and weakened—costlier, heavy bleaching is now necessary to remove discoloration. In contrast, sample with *preserved* size has effectively resisted mildew.

In almost *any* business you might name, Dowicide Preservatives of widely varying characteristics increase manufacturing efficiency and hold top product quality. Fourteen different Dowicides are used in the leather, paint, petroleum, paper and pulp, adhesives, agricultural, transportation, cordage and other industries. *Your* processing, packaging or selling operations might well benefit through use of one or several of these versatile Dowicide Preservatives.

Dow's laboratories will consult with you regarding your individual preservative problems. For detailed information, mail coupon to THE DOW CHEMICAL COMPANY, Midland, Michigan.

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FOR METALS AND BY-PRODUCTS: Left, coke and steel works, Geneva; right, world's largest open-pit copper mine, Magma.

have hesitated because they haven't been able to get firm, long-term commitments from pipeline companies.

Coking of Utah coal for Utah's steel mills produces coal chemicals. Coal resin—a product that appears to be peculiar to Utah bituminous—is extracted for use in paint, varnish and ink.

Besides its unique soft coal, Utah has several other unusual hydrocarbons: gilsonite (sometimes called "frozen oil"), oil shale, rock asphalt, bentonite, ozocerite and elaterite. Of these, only gilsonite is now being exploited; main uses: in insulation, sealants, surface coatings, waterproof agents and battery cases; it has shown promise as a metallurgical coking agent.

Atomic Age Spurt: Petroleum output is gaining in Utah. In the past four months, Shell has hit big production of high-gravity crude in two locations in San Juan County; two other new pools were proved in the huge Uintah Basin; and late last month, Esso's Carter Oil Co. found shallow production in Grand County.

Uranium mining and processing have become big business in Utah and three adjoining states, and the Salt Lake Stock Exchange has become the center of the nation's uranium fever. The uranium boom has brought new life and confidence to the industry of this area, and risk capital once again is easy to raise. For the chemical industry, the boom means added demand for salt, soda ash, sulfuric acid.

Despite talk and litigation about "water stealing" by other states, there's no shortage of water for industrial use

in northern Utah. Much of the furor on this score has centered on a fight for assured future supplies. And Utah Power & Light says that firm electric power is available as needed.

Though it still ranks as a lightweight in industrial chemical activity

compared with, say New Jersey or Texas, there's no doubt that Utah has plenty of potential for growth. As a kind of "breadbasket" for chemical production, the state may well be a main support for the nation's industrial expansion.

ABUILDING OR BLUEPRINTED

(Chemical industry expansion projects in Utah—
under construction or planned for future construction)

Ammonia

Salt Lake Chemical Co. (Salt Lake City); anhydrous ammonia, ammonium nitrate and carbon dioxide; estimated cost, \$8 million; construction not started.

U. S. Steel Corp. (Geneva); ammonia and ammonium nitrate; capacity, 70,000 tons/year; estimated cost, \$18.5 million; completion, mid-1956.

Utah Chemical Co. (Mt. Pleasant); anhydrous ammonia and urea; capacity, 278 tons/day; estimated cost, \$19 million; construction not started.

Ammonium sulfate

Howe Sound Co. (Garfield); ammonium sulfate as by-product from cobalt refinery.

Petroleum products

(All five major oil companies in Utah are planning to expand refinery capacities, ship products rather than crude out of the area.)

Phosphatic fertilizers

Western Phosphates, Inc. (Garfield); phosphoric acid capacity being increased 100%, permitting 50% increase in superphosphate output.

Sulfur

American Sulphur & Refining Co. (Sulphurdale); brimstone and soil sulfur; capacity, 100 tons/day; estimated cost, \$1 million; completion, March '55.

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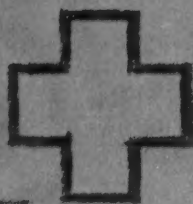
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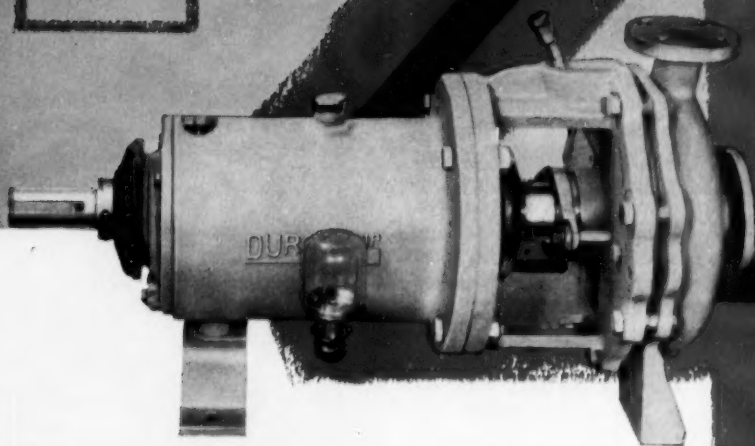
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WARM-UP AND PITCH: AFL lecturer Dorfman chats with Local President Buono . . . launches shop steward class . . .

Skull Practice for Strike Shunners

For AFL shop stewards at chemical plants and for big-league ballplayers, the 1955 spring training season is under way; and there's one skill that's being drilled into members of both groups: how to keep from being called out on strikes.

This try-to-avoid-strikes policy is nothing new with the AFL's International Chemical Workers Union, which has long been convinced that a strike is to be used only as a last resort (*CW*, Aug. 29, '53, p. 18).

What's new is the heavy stress

ICWU's Research & Education Dept. is laying on the knack of handling workers' complaints in a way that will prevent the outbreak of "walkout fever." How that knack is being inculcated in shop stewards can be seen in the training program now being held for members of ICWU's Local 111 at American Cyanamid's Calco plant at Bound Brook, N.J. CW visited a recent session (*see cuts*), watched and listened as lecturer Norman Dorfman coached some 35 unionists on how to shun strikes.



. . . stresses strict contract allegiance to in-plant grievances.



TEAM REACTION: Obvious appreciation of coach's tips.



CLEAN HIT: 'You get complaints all day, but when are they grievances?'



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BUSINESS & INDUSTRY

More Profit in Peace: Also in the curriculum of the training program at Bound Brook: pensions, wage incentive plans, and job evaluation. But three of the six sessions are devoted to grievance handling; and this is Dorfman's explanation:

"We're seeking orderly labor-management relations. Strikes are costly and benefit no one directly. Interrupted production is as bad for the workers as it is for management."

Not only is there more immediate profit in peaceful industrial relations; the union also feels that in pursuing this policy it's building a firm foundation for future collective bargaining. The idea is to demonstrate to management and the public that this union knows what it's talking about, can be counted on to live up to the

letter of each contract it makes.

Grievance Criteria: Starting point for the skill practice on grievance handling is how to distinguish between an arbitrable grievance and a complaint that's merely a "gripe." Dorfman's criteria: if it's a breach of the contract, trespass of federal or state law, infringement of company policy or a valid hardship case, then it's a legitimate in-plant grievance.

For all parties concerned, this kind of training has proved valuable in the past.

But for the industry, the main significance of this labor educational work and its increased emphasis on curbing worker dissatisfaction is the assurance it brings that chemical labor is gaining in maturity and sense of responsibility.



No Martian Cobwebs Here

PUBLIC APPREHENSION in Horseheads, N.Y., was stilled last week when tests revealed that the mysterious cobwebby substance that had settled down on the town

was casein residue from a dairy explosion. Residents, aware that Nevada atom tests were in progress, feared a radioactive fallout, rushed test samples to Elmira College.

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Photo left: Actual light tracing photo shows how knife blade or pull and tug method of opening wastes time and product.

Photo right: Snap motion opening — saves time and product.

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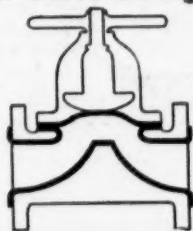
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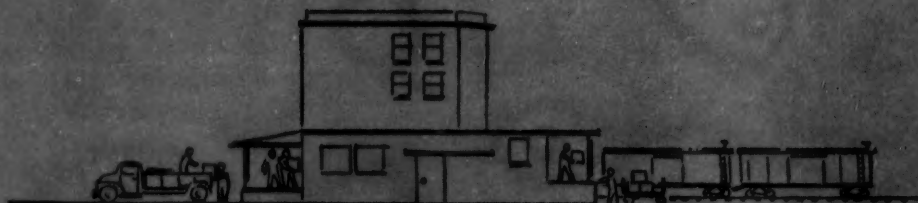


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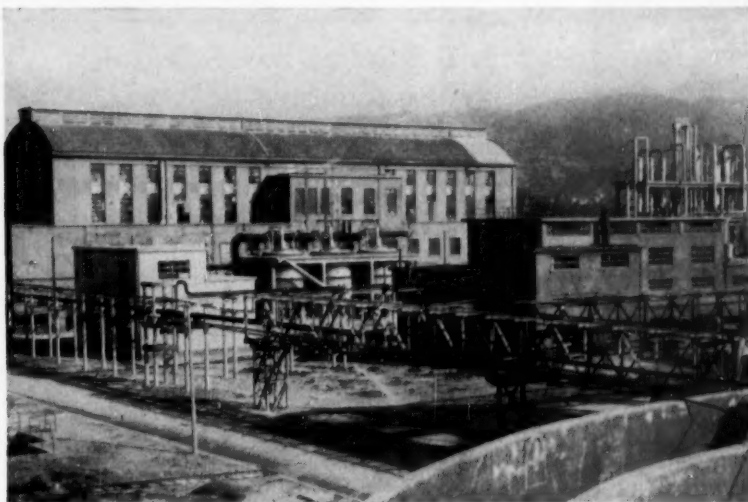
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INCREASING CAPACITY: Cisa-Viscosa's polymer plant at Cerni.

FOREIGN.

Expansion/Italy: In the melee of preparations for next June's World Oil Congress in Rome (CW, March 5, p. 32), Italian chemical companies were totting up achievement records for 1954. Leading the way: plastic and synthetic fiber producers, many of whom boast all-time sales records. Making the outlook even brighter: several synthetic fibers makers report contracts signed for export of output not yet onstream (*see cut above*).

Nylon/Mexico: Celanese Mexicana, S. A., Mexican affiliate of the Celanese Corp. of America, will start production of nylon fiber within the year at its Ocotlan plant in the west-central state of Jalisco. Initial production is expected to virtually eliminate heavy imports of nylon (mostly from the U.S.), which cost Mexico \$12.8 million from 1949-55.

Fertilizer/Netherlands: Mekog, one of the Netherlands' leading fertilizer producers, claims to be the first company in the world to produce fertilizer commercially from crude oil. The company plans to build a new plant in Velsen-Ymuiden soon, will raise its annual fertilizer output from 370,000 to 500,000 tons.

Sulfur Imports/Switzerland: Swiss government authorities have lifted sulfur import licensing requirements in force since Sept. '51. Reason: sulfur market conditions on the Continent,

according to the Swiss, have now "returned to normal."

Waxes/Mexico: Ceras Johnson de Mexico, subsidiary of S. C. Johnson & Son, Inc. (Racine, Wis.), has started manufacture of waxes in Mexico. Output today stands at 125,000 lbs./year, but company spokesmen say they expect to have new facilities in operation early in 1956 that will raise production more than 50%.

Copper Sulfate/France: The French Foreign Ministry has decided that a quota of 4000 tons of copper sulfate may be imported into France this year free of the 8% import duty.

Spanish-Japanese Trade: Spain plans to export 50,000 tons of potassium chlorate to Japan within the next few months. Value of the shipments (which will be made from Barcelona): \$1.4 million.

Titanium/Japan: Japanese producers registered important increases in titanium production during 1954. Output totaled 610 tons, an eightfold increase over '53, 100 times more than was produced in '52.

Over 70% of the total production was exported—231 tons to the U.S., 198 tons to Great Britain, 100 tons to West Germany.

This year's records look even more imposing. Japanese exporters expect to ship titanium ingot as well as sponge titanium to the U.S., including 19,000 tons for military end uses.

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"	Koppers Co.	Styrene monomer	465,000	Convertibility
"	Rohm & Haas	Fungicides	441,100	Convertibility
West Germany	Godfrey L. Cabot	Carbon black	1,000,000	Convertibility
"	E. F. Houghton	Lubricants, tanning chemicals	93,000	Convertibility
"	Firestone Tire & Rubber	Tires, tubes	1,841,700	Convertibility and Expropriation
Italy	E. F. Houghton	Lubricants, tanning chemicals	17,500	Convertibility
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"	National Aluminate	Boiler compounds	1,602,000	Convertibility and Expropriation
Turkey	Olin Mathieson	Pharmaceuticals	2,711,450	Convertibility
United Kingdom	Olin Mathieson	Pharmaceuticals	735,000	Convertibility
"	Godfrey L. Cabot	Carbon black	2,025,000	Convertibility
"	Universal Oil Products	Platinum cracking catalysts	750,000	Convertibility
"	Parke, Davis	Pharmaceuticals	735,000	Convertibility

Bandwagon to Watch

By this week, it appears as though U.S. chemical producers are starting to take substantial advantage of the Foreign Operations Administration's guarantee program to protect foreign investments against nonbusiness risks. A total of 17 overseas chemical investments are already covered by FOA guarantees (*see table*), and some 20-25 applications for guarantees are now pending.

Launched two years ago to en-

courage the flow of U.S. capital abroad, the program aims to protect the U.S. foreign investor against inability to repatriate his profits and principal in dollars, as well as guard him against expropriation.

Three Types Possible: There are three types of guarantees open to chemical companies under the FOA system—but most granted so far have been convertibility guarantees insuring principal and up to 200% of the

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principal in profits for up to 20 years. Reason: in only two cases to date (National Aluminate's deal in Italy, and Godfrey L. Cabot's investment in Great Britain) has the U.S. company's investment involved a wholly owned subsidiary where it would need expropriation guarantees. In most instances, FOA spokesmen say, U.S. companies that have applied for FOA guarantees are interested in protecting loans, royalties from licensing operations, or other forms of know-how investment.

No convincing explanation, FOA officials admit, has been offered as to why certain sectors of the chemical industry seem more interested than others in getting investment guarantees. (There's been a noticeable lack of interest among heavy chemical producers, for example.)

That will all be rectified soon if the present rush of applications is accepted, though. Observers note that among last week's petitions were several from basic chemical producers; other industry luminaries have been openly scanning guarantee possibilities before committing themselves to overseas expansion plans.

Under Fire Again

Led by House Commerce Committee Chairman J. Percy Priest (D., Tenn.), congressmen last week were calling for legislation to protect the nation against possible dangers from increased use of chemicals in food.

Priest pledges he will hold hearings on bills to bar use of chemicals until they have been thoroughly tested and "determined to be safe." Instrument for enforcement of such regulations, he notes, is the Food & Drug Administration "... but its present authority simply isn't great enough to cope with policing problems."

Rep. James J. Delaney (D., N.Y.), who spearheaded the 1951-52 investigation of the use of chemicals in foods and cosmetics, is seconding his views, has introduced two bills to require pretesting of chemicals.

Pointing out that as of 1952, 39% of all chemicals used in food were found to be dangerous, Delaney asserts the situation is even worse now.

Making the charge of prime importance to chemical producers: this Congress should prove to be much more receptive to control legislation.



MEANY: His organizing schedule lists scientists . . .

Next in Line of Fire

Chemical production and maintenance workers, it's clear now, will be the first unionizing target of the soon-to-be-merged AFL and CIO. But, next on the list of top-priority groups for organizing are scientists, engineers and technicians.

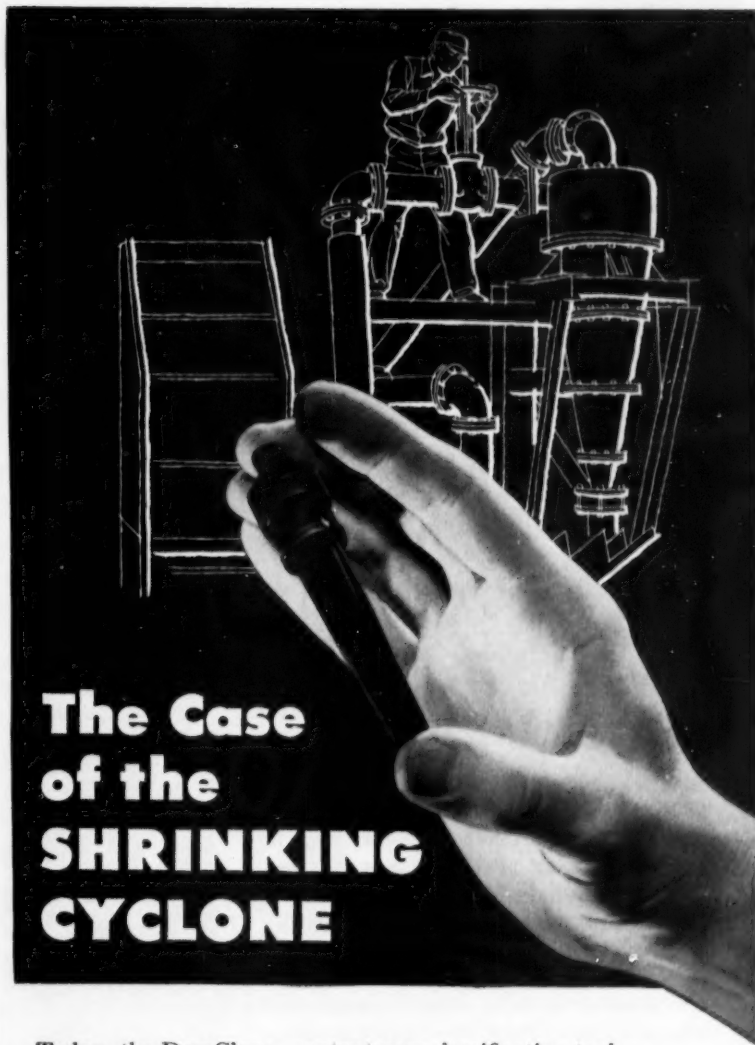
AFL President George Meany is already challenging the professional engineering societies to try to keep their members from joining the AFL's 37-year-old American Federation of Technical Engineers, which he asserts has "provided substantially higher living standards" for its approximately 7000 members.

However, if the enlarged AFL throws its full weight behind an organizing campaign for AFTE, almost certain conflict is foreseen with a younger association that so far has eschewed affiliation with trade unions: the Engineers & Scientists of America.

So the future fight for the right to bargain for the nation's nonmanagerial technical employees shapes up like this:

ESA vs AFTE, and both of them against numerous professional societies.

Few chemical companies now employ technologists in large work units—which are what ESA and AFTE will aim at first. But, if those few large chemical groups should be signed up, the smaller groups are likely to fear that to stay out would mean being left behind in salary gains.



The Case of the SHRINKING CYCLONE

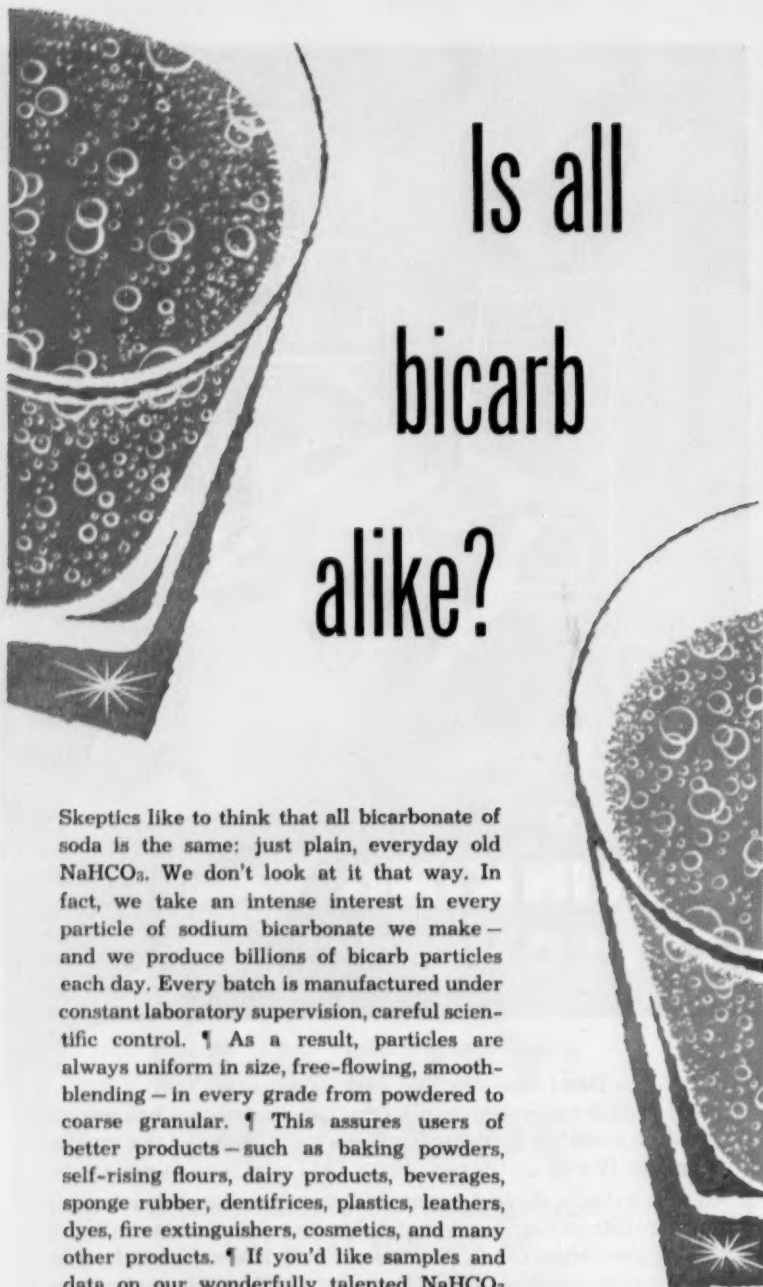
Today, the Dorrcyclone — potent new classification tool — is undergoing a physical transformation. Experience has proven that decreasing its diameter increases the fineness of the separation made. Result . . . the pencil-size TM Dorrcyclone shown above.

These bakelite midgets, nested 32 to a housing, are doing big things in filtrate clarification and fine size classification in the 2 to 20 micron range. Clays, pharmaceuticals, fillers, pigments, talc, grinding compounds — all can be economically processed by these 10 mm TM's or their companion 15 mm units of molded rubber.

The case of the shrinking cyclone is a good example of the constant evolution of Dorrr-Oliver machines and methods. If you have a problem involving the separation of finely divided solids in suspension, the use of ion-exchange, or fluid techniques, the chances are good that we can be of service to you through our worldwide organization.

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B & I



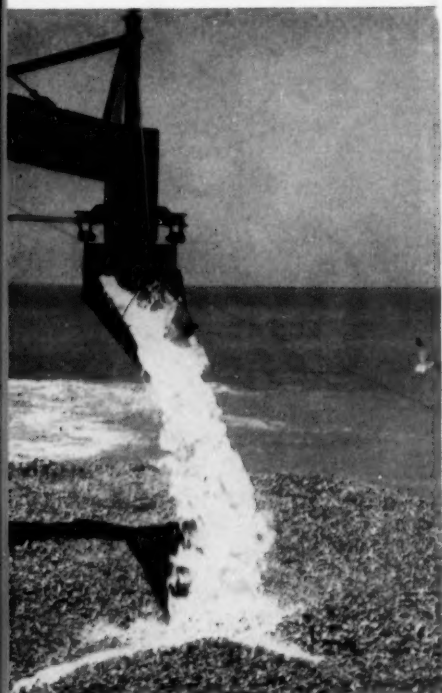
DREDGING OPERATIONS: Supply 10 million

LEGAL

Repercussions Signaled? Whether the Texas Game, Fish, and Oyster Commission has the power to tax oyster shells faced a test of constitutionality last week. Seeking a declaratory judgment of the statute, Mayo Shell Corp. (Houston) contends it is an unlawful delegation of the Texas state legislature's taxing powers.

Involved directly in the case's outcome: chemical companies in the Houston area that are large consumers of the shells as a source of lime. Direction the complainant's case will probably take: that the commission's taxing device sets minimum prices on the oyster shells, but fixes no tax ceiling, hence is illegal.

Violation of Contract? Delaware Chemicals, Inc. has filed suit in the Delaware chancery court against Reichhold Chemicals, Inc. charging violation of contract. Involved in the hassle: trade secrets relating to manufacture and sale of pentaerythritol—allegedly disclosed to Reichhold by Delaware Chemicals as a result of a contract executed Oct. 27, 1950. In addition to its request for an injunction, Delaware Chemicals is asking for \$1 million in damages, punitive



tons/year of shells—half to Texas companies.

damages, and an allowance for attorneys' fees. Reichhold plans to launch countersuit for several million dollars in damages . . . because of allegedly unsatisfactory pentaerythritol received from Delaware Chemicals.

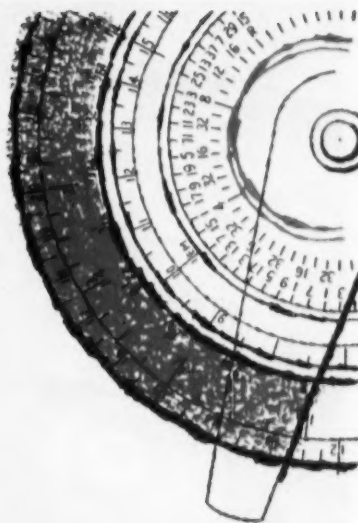
Motions Refused: Circuit Judge Ward P. Holt denied a motion in Hillsboro, Ill., last week to quash indictments against National Petro-Chemicals Corp. (Tuscola, Ill.). The indictments, returned last November, charged National Petro-Chemicals with polluting the Kankaskia River in Dec. '53. The defendants were granted a change of venue from Shelby County to Montgomery County for the trial because of "inflamed" public opinion.

And in Wilmington, Del., U.S. District Judge Richard S. Rodney denied two motions last week:

- Motion by Permutit Co. for rehearing of the *Rohm & Haas vs Permutit* summary judgment on a patent litigation.

- Motion to dismiss (on grounds of lack of jurisdiction) the case of Minnesota Mining & Manufacturing Co. and Phillip Palmquist against Chavannes Industrial Synthetic, Inc., Mark Chavannes, and Plastic Film Corp. (CW, Nov. 20, '54, p. 32).

Calculating on a new product?



call on us

The starting place of a new product is frequently in the precipitate at the bottom of a test tube—or in the lines of a spectrograph. On the other hand, product development in reverse—that is, exhaustive analysis of what goes into a product—often presents new clues to improvement by slight changes in chemical structure. ¶ Here at Wyandotte, we're equipped to do both: develop new products; improve old ones through the addition or substitution of research-developed chemical ingredients. ¶ If you've a new product in the works—or if you're revamping an old one—remember, our chemical know-how is on tap for you at all times. For technical assistance, outline your needs in as much detail as possible, and send your outline along to us. We'll forward as much pertinent

data as we have (and we have quite a bit). Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.



Wyandotte
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C_8H_{17}

OCTYLPHENOL



C_9H_{19}

NONYLPHENOL



B & I



WIDE WORLD
QUILL: On AFL-CIO merger pact, he charges 'sell out.'

LABOR

Last week's ratification by the CIO executive board of the merger agreement with AFL may cost the new 15-million member federation the loss of one CIO union. Outspoken critic of the merger move: Michael J. Quill, president of the 120,000-member Transport Workers Union. The merger agreement, he claimed in a turbulent four-hour session, fails to spell out guarantees against raiding, corruption, communism, and racial discrimination.

Whether TWU chooses to go along with the merger should have no practical effect on its consummation, however. CIO President Walter Reuther dismisses the TWU stand as "unfortunate," notes that the transport workers represent a very small proportion of CIO's 5 million members. Its dissent, however, could be symptomatic of friction that will crop up in chemical plants before too long.

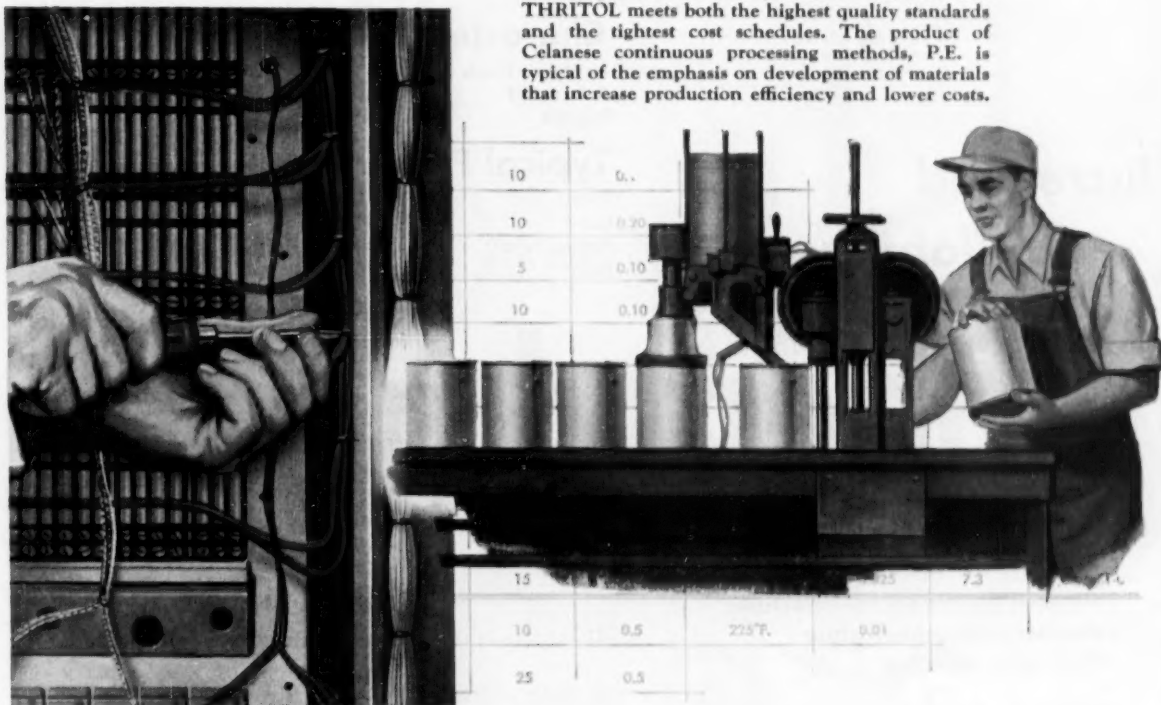
•
Strikes—threatened, continuing and settled—were in the news this week:

- Over 1300 workers at B. F. Goodrich Rubber Co.'s plant at Tuscaloosa, Ala., walked off the job for the second time within a week in a dispute over work regulations. Under fire: recent incentive standards adopted by Goodrich.

- Picketing by Local 870, AFL Construction Laborers Union, at Gulf States Asphalt Co.'s plant at Beaumont, Tex., continued, with no end in sight. The union's charge: that Gulf

Excellent flame resistance in vinyl wire insulation and nitrate plastics has been achieved with TRICRESYL PHOSPHATE. Developed by Celanese, this organic chemical also increases the safety factor in hydraulic fluids. Its versatility is demonstrated by its use as an additive in premium motor fuels, where it is boosting both gasoline performance and sales.

As a "double-duty" basic material in the production of alkyd paints and enamels, Celanese* PENTAERYTHRITOL meets both the highest quality standards and the tightest cost schedules. The product of Celanese continuous processing methods, P.E. is typical of the emphasis on development of materials that increase production efficiency and lower costs.



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... and a stable price structure to stimulate long-term planning.

Celanese Technical Service can work with your research and engineering groups in making organic chemicals work better for you. Ask us to show you how.

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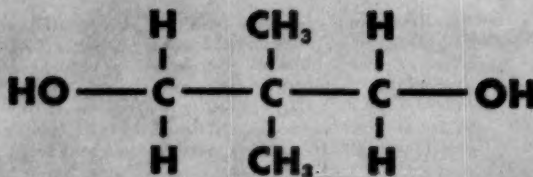
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Polymeric plasticizer manufacture
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Interest in this isobutyraldehyde derivative has increased to such a degree that additional production has become necessary. A large pilot plant is now in operation at Longview, Texas, and semi-commercial quantities are immediately available. Write to us at Kingsport, Tennessee, for details.

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Characteristics:

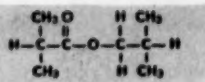
Short chain length
Symmetrical
Reactive

Typical Properties:

Form	Crystalline Solid
Color	White
Melting Point	124°–130°C
Purity	96% Minimum

other derivatives

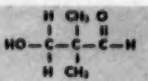
of Eastman isobutyraldehyde now available include:



isobutyl isobutyrate

Color, APHA	15 maximum
Ester Content	98% minimum
Boiling Range	146°–148°C/760 mm
Specific Gravity, 20°/20°C	0.850–0.860
Acidity, as isobutyric acid	0.5% maximum

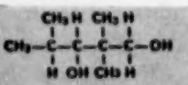
Available in pilot plant quantities



hydroxypivaldehyde

Form	Solid
Color, APHA	200 maximum
Assay (wet basis)	50% minimum
Assay (dry basis)	90% minimum

Available in pilot plant quantities, shipped as a wet cake to insure stability.



2,2,4-trimethyl-1,3-pentanediol

Form	Crystalline Solid
Color	White
Melting Point	49°–51°C
Purity	95% minimum

Available in research quantities

B & I.

States is paying rates lower than those established in the area: the company's claim: that it's paying fair and adequate wages for current reconversion operations.

- Amicable settlement was also reached at Oak Ridge, Tenn., when Carbide and Carbon Chemicals Corp. revoked discharge notices given 47 employees of Local 288, CIO United Gas, Coke, and Chemical Workers. The union had threatened to strike, contending the discharge violated an arbiter's ruling in a grievance it had filed against Carbide.

- Production workers at Dow Chemical Co.'s Venice, Ill., works returned after an order from David McDonald, international president of the CIO United Steelworkers. Local 4804's wildcat walkout followed suspension of a maintenance worker as a disciplinary measure.

Negotiators for Goodyear Tire & Rubber Co. and Local 2, United Rubber Workers, were busy on another score, too. A companywide contract has been approved by the Akron Local covering 1400 workers, but before any master agreement can go into effect, a supplemental pact must be carved out and signed, and at least five other URW locals must be swung into line.

KEY CHANGES. . .

Stanley de J. Osborne, and Eugene F. Williams, Jr., to directors, Olin Mathieson Chemical Corp. (Baltimore).

William P. Drake, to executive vice-president and director, Pennsylvania Salt Manufacturing Co. (Philadelphia).

Robert L. Hutchison, and Joseph A. Neubauer, to vice-presidents, Columbia-Southern Chemical Corp. (Pittsburgh).

Tom R. Ragland, to vice-president, Union Carbide International Co. (New York).

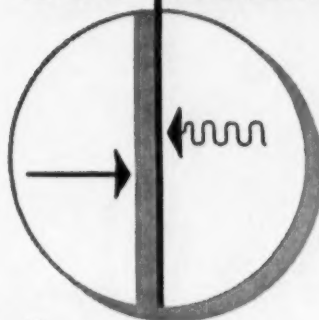
Carl F. Prutton, to director, Food Machinery & Chemical Corp. (San Jose, Calif.).

E. T. Asplundh, to director, Southern Minerals Corp. (Corpus Christi, Tex.).

John T. Conner, to vice-president and general manager, Merck-Sharp & Dohme International Division (Rahway, N. J.).

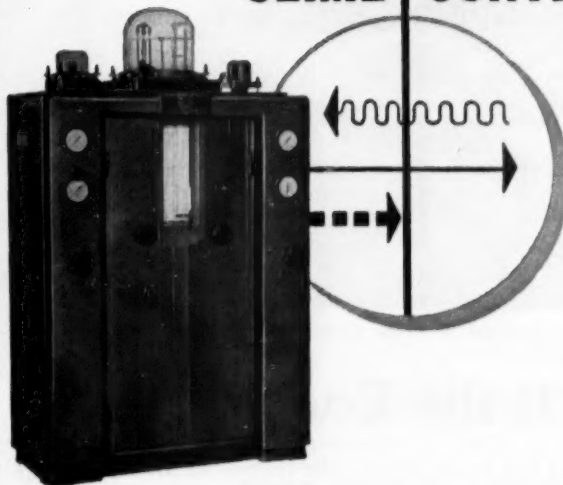
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CD-38



BAG STACKING is analyzed by strobe photos, Laurus platform at Du Pont's Haskell Labs. It's all part of the job of . . .

Doing It the Easy Way

Fitting the equipment to the man is an idea still largely untapped by the chemical industry.

But it's a fertile field for boosting efficiency, saving money. Here are a few of the moves firms are making.

If you've ever performed a tedious, repetitive job, you've probably thought: "There must be an easier way of doing this." Finding that is the job of a time-and-motion-study man.

But if you've ever stood on your toes and reached into an inaccessible place to turn a valve, you've probably thought: "There must be a better location for that valve." Finding the better spot is the job of the "human engineer," a man that chemical companies are finding pays his own way.

Hand in Hand: In the strictest sense, time-and-motion study and human engineering are inseparable in that both are concerned with making

the worker more efficient. The human engineer, however, deals more with the optimum design and arrangement of equipment to permit the operator to do more—with less effort and less chance of error.

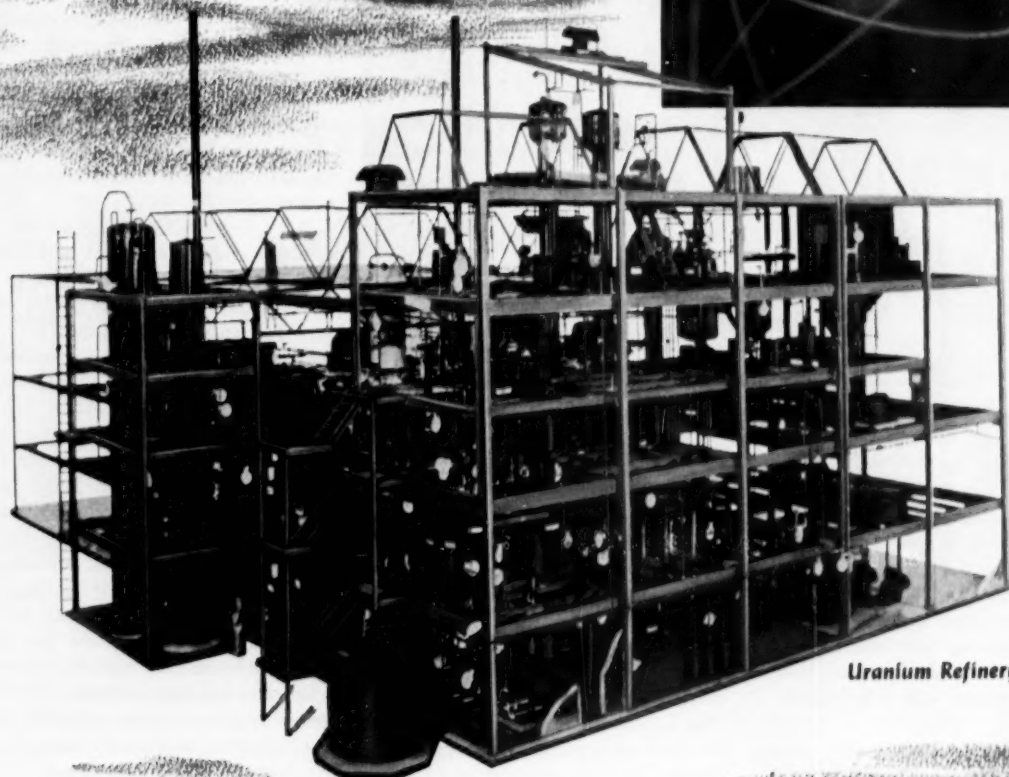
By and large, the process industries have lagged behind others in exploiting the new science. Probably the basic reason is that the need was not so great. Cost of labor in the chemical industry, for instance, has not been as significant a factor in the cost of the finished product as it has in other manufacturing industries. Hence, there was no great urge to make the worker more efficient.

Moreover, in the past the chemical operator was a highly skilled person who performed a few jobs very well. If he had any problems in human engineering, chances are he could work up a satisfactory solution himself.

But that's all changing fast. With the advent of more complex processes, more and better instruments, the operator has to keep tabs on a greater number of variables. He must cover a lot more ground and it's incumbent on the engineers to see that obstacles are not thrown in his way.

The outstanding example of this change and its effect on the design of plants is in the evolution of modern control panels. Earlier models consisted of a few recorders located in a central spot. As more instruments were added, positioning them became an increasingly important consideration.

Now miniaturized instruments and



Uranium Refinery

MODEL for Tomorrow

The full scale commercial uranium refining plant—of which this is a model—is now under construction at Port Hope, Ontario, and will be completed in 1955, the first of its kind in Canada. With engineering and construction by Catalytic, it will make available to Eldorado Mining and Refining, Limited (a Crown Company)

the most advanced processes for uranium refining. This new example of our services in advancing uranium technology portrays Catalytic's position of leadership in the industry of tomorrow. We welcome your inquiries today—that Catalytic's on-time, on-budget services may contribute to your success of tomorrow.

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PROCESS CONTROL: Operator is the key link in man-machine closed loop.

graphic panels simplify the training of operators, give a clearer picture of what's going on. Dials and gauges, designed with a knowledge of man's capabilities and limitations in seeing and recognizing objects, are easier to see and read. And the instruments by which operations are controlled are situated so that the operator has a maximum access with a minimum of effort.

But in control circuit design, human engineering doesn't stop with improvements that show on the surface. Intricate digital and analog computers, for instance, have taken over the tedious job of handling data—simplifying the operator's task on one hand, complicating the maintenance man's job on the other. Since maintenance is necessary to dependable operation, the designers are following through with building block construction, standard coding, and built-in test and trouble indicators to insure the same high degree of efficiency in servicing.

The Missing Link: In general, however, the process industry has a lot to learn in the field of human engineering. Says one prominent design engineer, "We've come a long way in our mechanical design. But in our eagerness to attain the ultimate in control engineering, we've forgotten that man is still an important link in the closed control loop. We've also made great strides in the selection of the best man for a given job by the use of aptitude tests. What we have to do now is

to minimize requirements for the jobs so that more men can fill them."

Firms actively engaged in human engineering studies are sparing no effort, however. Du Pont, at its Haskell Laboratory for Toxicology and Industrial Medicine uses stroboscopic photos (see cut, preceding page) to analyze lost motion, a \$20,000 Laurus platform to record energy expended. The Laurus platform, which is sensitive enough to measure the energy expended by a rat crossing its 3-ft. surface, takes the guesswork out of job improvements.

International Minerals & Chemical Corp. applied what's essentially human engineering in its control lab for the Bonnie, Fla., plant (CW, May 29, '54, p. 62). Benches are built so that technicians can either stand or sit and do the job; reagents and necessary tools are placed so that the workers can reach them comfortably. By careful consideration of the various procedures, in fact, the firm is saving \$40,000/year in increased output per man.

Another human engineering study by the same firm revolved around a mining operation at its Phosphate Minerals Division (Bartow, Fla.). The problem involved the design of a control cab for dragline mining machines. It didn't require a human engineer to see that the old cab location (behind the boom and catwalk) limited the operator's vision. But it did take some special knowledge of psychology and human limitations to foresee that

merely relocating the cab for better visibility was not the best solution.

For one thing, there was the problem of control. True, better visibility of the dragline bucket would help the operator to guide it. But experienced observers noted that unnatural movements requiring coordination of hands and feet caused even the most skilled operators to "over-control" the machine. Also, exposure to the elements, dirt, and noise through the cab's open construction created discomfort and mental distractions to further limit control efficiency.

With a \$1-million machine in his control, engineers questioned, why shouldn't the operator have at least as much comfort as he has in his own car? The answer: he should. The result: a dragline control cab enclosed and insulated against noise and weather; an out-front location, windshield wipers, and adequate lighting to give a good view of what's going on; simple, easy-to-coordinate hand controls operable from a comfortable chair or standing position.

Besides the operating essentials, many extras were built in to simplify less important functions. Load counters controlled by buttons on the operating levers total materials moved, limit switches automatically prevent chains from running into sheaves, and a convenient overhead microphone lets operator communicate with oiler, pit man, or front office by radio.

Who Does It? Franklin Institute (Philadelphia) has specialized in engineering psychology for the past 10-12 years. Though its work has been devoted primarily to military applications for the government, FIL has contributed much to the basic knowledge of the science.

Dunlap and Associates, Inc. (Stamford, Conn.) has done most of its work in the field of industrial applications, was the firm that worked on IMC's mining project. In addition to consultant work, Dunlap conducts an institute (June 6-10 this year) for training company representatives in the use of handbooks, experimental techniques, psychology, and all other phases of the subject.

Programmed Progress: The day may be at hand when every plant will have its staff of specialists to carry on a continuous program of human engineering. Many companies, besides Du Pont and IMC, are sold on it and



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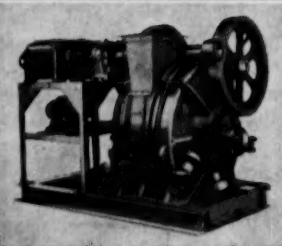
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PRODUCTION

have such programs under way. And for those that lack the trained specialists to conduct their own studies, there are such consultant organizations to work with and train plant personnel.

Standard for Pumps?

The chemical industry, which is habitually aggressive and forward looking, has been painfully backwards in one area: acceptance of standardized equipment. But it may make up for some lost time if a proposal made by the Chemical Industry Advisory Board to the American Standards Assn. goes through. It would standardize low-pressure centrifugal pumps, would save the chemical industry an estimated \$6.8 million/year.

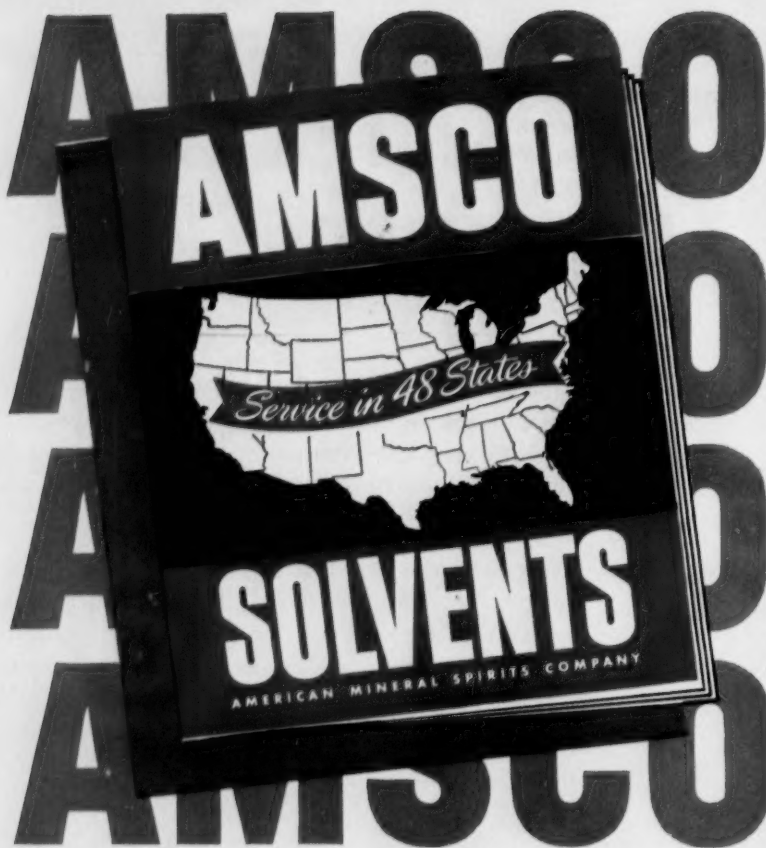
The proposal has gone out to more than 30 national organizations representing designers, manufacturers and users of the equipment, inviting them to send representatives to a national conference scheduled to be held in New York on April 7. It covers horizontal, end-suction, single-stage and electric-driven models of capacities from 5-to 1000 gal./minute and temperatures up to 500 F.

Competition Unhindered: The Advisory Board, after studying the situation, arrived at the conclusion that in commercially available pumps, dimensions differ slightly for no apparent functional reasons, that certain features of the pumps can be standardized without impairing the competitive position of the manufacturers.

Acceptance of the proposal, the board feels, would:

- Mean savings to the chemical industry by lowering maintenance and replacement costs because of dimensional interchangeability. It would lower capital investment for new construction by cutting design time, construction labor and warehousing facilities.
- Put money in the pockets of the pump manufacturer by giving him uniform specifications and eliminating many special requirements.
- Reduce the manpower requirements and consumption of essential materials.
- Lead to a better understanding of problems by both the maker and the user through freer exchange of information.

Because of the potential impact of



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PRODUCTION

the proposal on the chemical industry the Manufacturing Chemists Assn. will be asked to assume administrative leadership for the standards program. The complexity of the problem and the many ramifications involved, of course, mean that the proposal will bet a careful scrutiny, and fast acceptance is unlikely. The \$6.8 million savings, however, is a potent argument for ultimate action.

Saline Scale-up

The Interior Dept.'s saline water development program, which has been studying—on a small scale—the different methods of desalting and demineralizing water (*CW*, June 12, '54, p. 38) may soon get a green light to move on to pilot-plant operations.

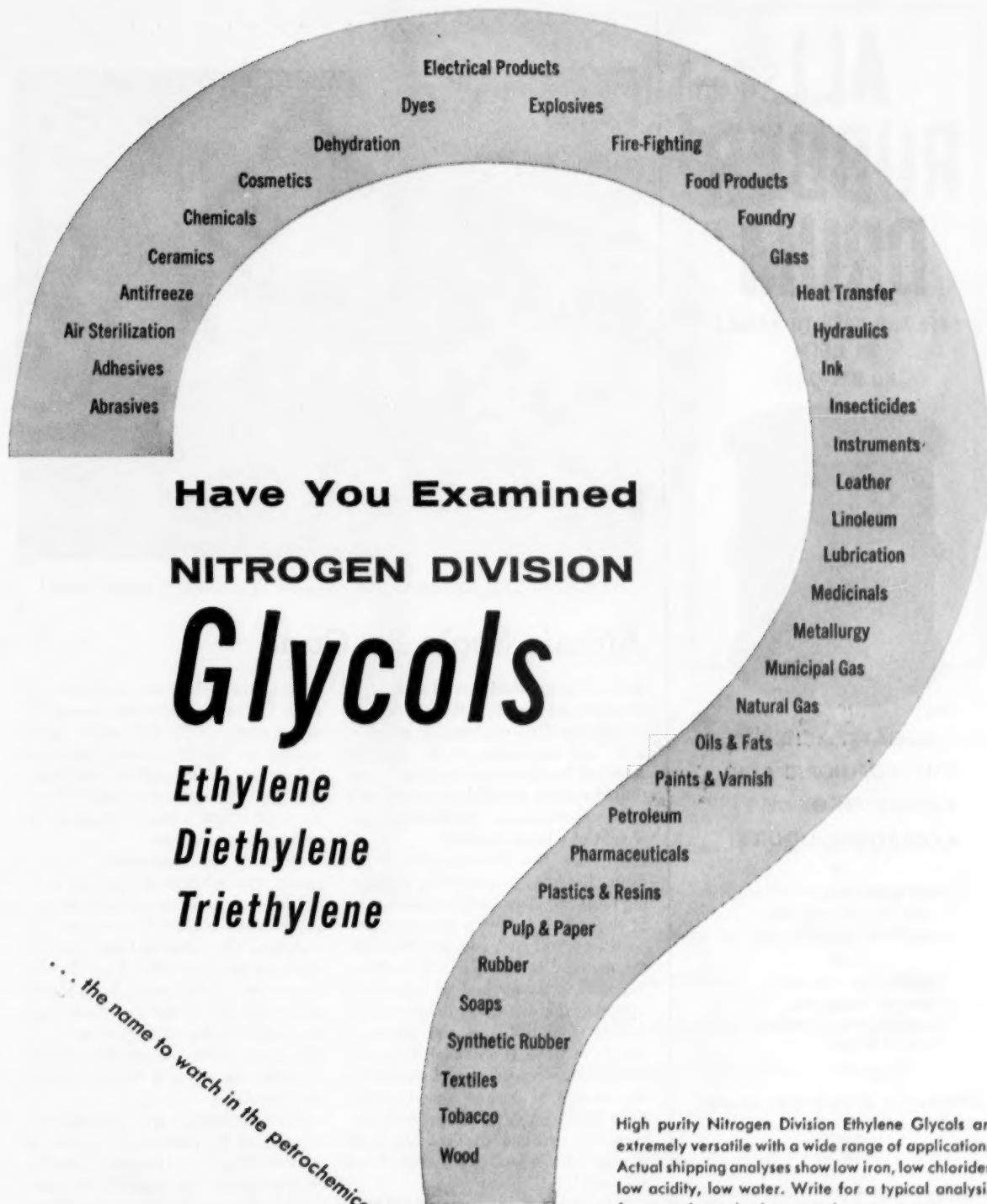
That was the upshot of the action taken late last month when the House Interior Committee approved a bill adding five more years to the research program, which only had about 27 more months to run.

The committee's action came about because of a technicality: the present law is interpreted to mean that all phases of the program—including the writing of a final report—would have to be completed by July 17, '57. Program administrators had hoped that the 1957 deadline would apply only to signing of the contracts and that work might be extended a year or so beyond the legal limit.

Supporting their request for both an extension in time and an increase in fund authorization (from \$2 million to \$6 million), Interior officials pointed out that although no radical improvements are in the offing, several processes are showing promise. If the deadline were enforced, contracts could not be let after this year.

Under the extended program, research would be continued and some eight-to-ten pilot plants (each costing between \$100,000 and \$400,000) would be built. Even the first of these, however, probably won't be contracted for until '57, and most of them would be put up between '58 and '61.

The House committee action, of course, is only the first hurdle that the enlarged program must clear. Still remaining are: approval by the full House, a Senate committee and the full Senate. Then the actual money requests would have to be okayed in the Interior Dept. appropriations.



Have You Examined

NITROGEN DIVISION

Glycols

Ethylene

Diethylene

Triethylene

... the name to watch in the petrochemicals field

Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate
Sodium Nitrate • Methanol • Urea • Ethanolamines
Ethylene Oxide • Ethylene Glycols • Nitrogen Tetroxide
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Fertilizers & Feed Supplements



High purity Nitrogen Division Ethylene Glycols are extremely versatile with a wide range of applications. Actual shipping analyses show low iron, low chlorides, low acidity, low water. Write for a typical analysis, free sample, and price quotation.

An expert Technical Service Department is available to help you solve your analytical, handling and storage, process and production problems.

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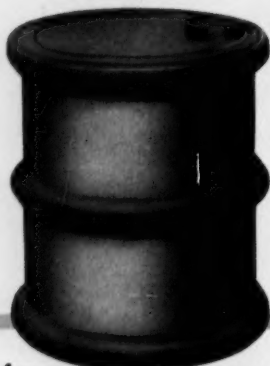
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ALL RUBBER DRUM

SAFE AND EASY TO HANDLE!

NO METAL
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- MURIATIC ACID
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- CORROSIVE LIQUIDS



ICC-43A SPEC.
Tare Weight—34 lbs.
13 gallon capacity



Made with
Natural, Neoprene,
Butyl or other Synthetic
Rubber Linings



Threaded or Stopper type closures

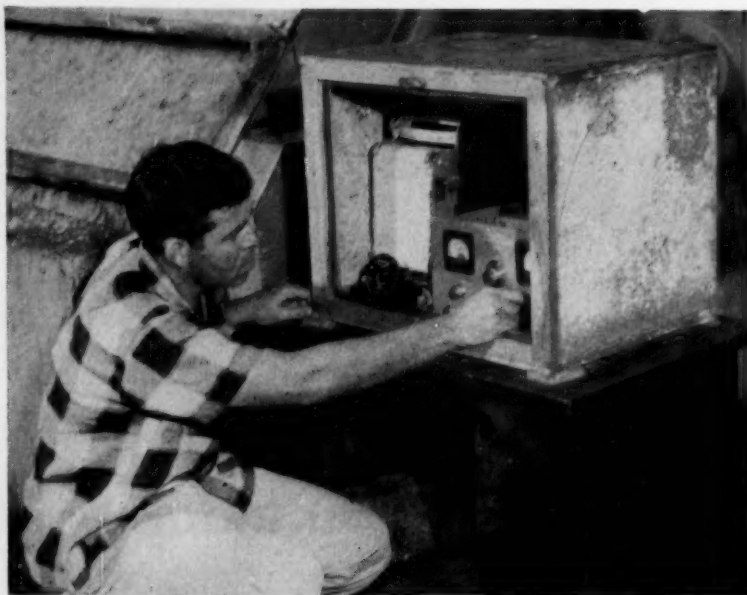


**THE GENERAL TIRE
& RUBBER COMPANY**

MECHANICAL GOODS DIVISION
WABASH, INDIANA

Distributed by **THE C. P. HALL CO.**
5147 W. 67th St. • CHICAGO 38, ILL.
AKRON, O. • CHICAGO, ILL.
NEWARK, N. J. • LOS ANGELES, CAL.

PRODUCTION



WEIGHING THE RESIDUE: The difference in radiation is what's counted.

Atomic Scale for Cane

Measuring the thickness of a sheet by its ability to absorb radioactivity is by now a standard engineering practice. But the Hawaiian Sugar Planters Assn., at its experiment station, is putting the same principle to work on a new application: measuring the weight of a loose material.

For years, the Hawaiian sugar industry has been plagued with a weighing problem. Here's why: Cane arrives at the mill laden with generous proportions of soil, rock and dirt. Although the material is weighed before cleaning, there's no method of accurately weighing the wet cane. Juices are extracted from the cane and an exact weight of them is obtained, but until now there's been no way of measuring the amount of bagasse that remains. After the sugar is recovered from the juice, it's trucked to dockside bulk storage bins where it's weighed on delivery.

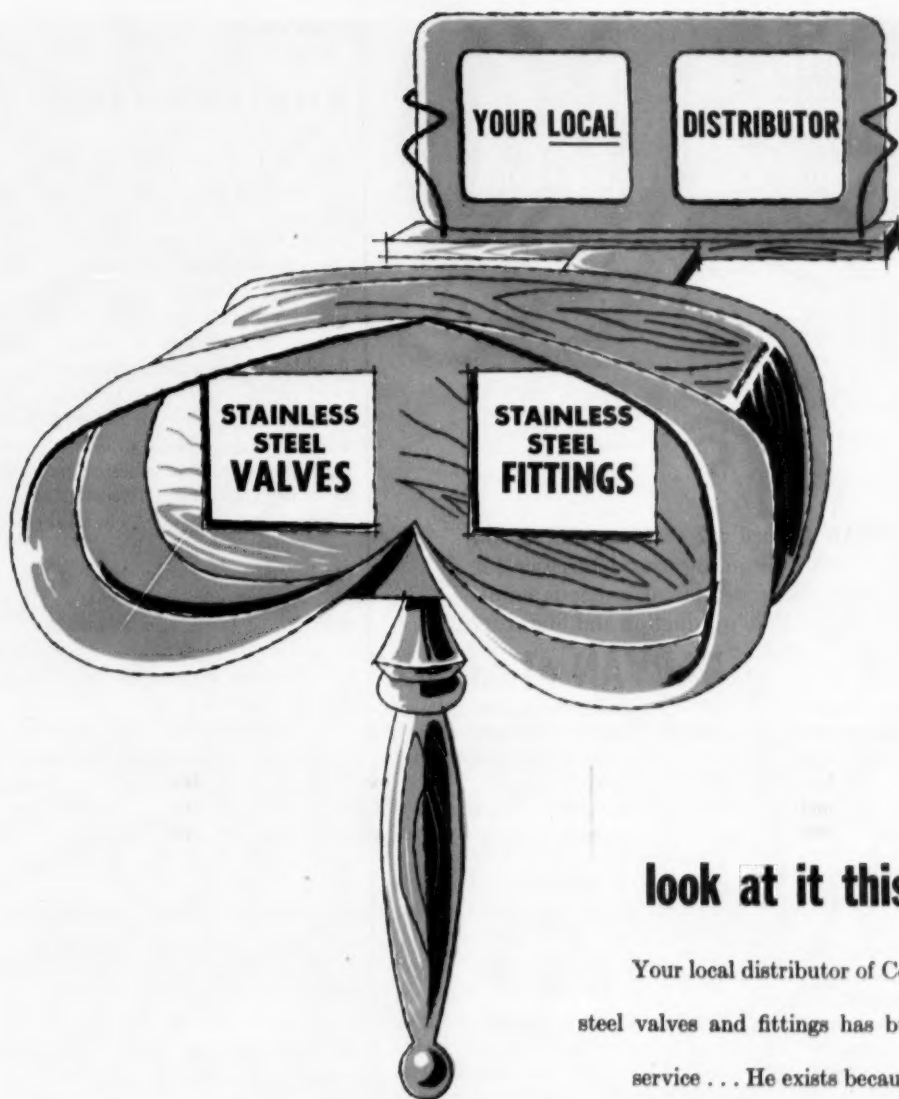
Not knowing the weight of the bagasse meant there was no reliable method of finding out how much cane was actually being processed; and that in turn played hob with any studies of production and milling efficiency and on juice quality.

The solution finally hit upon was the use of radioactive cobalt and a geiger counter. The bagasse falls a few feet,

passing the cobalt on one side (*see cut*). The material absorbs some of the radioactivity in its fall and a geiger counter on the other side determines the amount of radioactivity that passes through. The amount of radioactivity that's absorbed is proportional to the weight of the bagasse.

Question of Approach: At first glance, this solution might seem to be a difficult approach to a simple measuring problem. It's hard to convince U.S. engineers, for instance, that a straight conveyor scale wouldn't be a simpler, cheaper method of attack. But Leonard Bayer, director of the experiment station, says that the radioactive device is the only satisfactory method he's found to weigh the material without halting the operation.

Engineers might also question the accuracy of the principle as applied to a free-falling, loose material. But the experiment station has been working on the idea for over two years, claims the method has an error of less than 2%. It's proved so successful that a commercial model is now being placed in operation. In fact, studies are being extended to the weighing of the sugar as it leaves the plant. For although it's weighed at the storage bins, a mill check would be a big boost to quality control.



look at it this way.....

Your local distributor of Cooper Alloy stainless steel valves and fittings has built his business on service . . . He exists because he is able to meet your plant needs, because he can carry the big inventory load for you, and because he carries at his fingertips the latest information on design, applications, maintenance and repair. When you bring Cooper Alloy stainless steel valves and fittings into focus with your local distributor, you're seeing your way clear to the best in service and the best in equipment.



COOPER ALLOY
CORPORATION • HILLSIDE, N. J.

Valve & Fitting Division

for controlling
the physical properties
of emulsions and dispersions



VEEGUM and DARVAN #1 and #2 . . . suspending and dispersing agents with outstanding characteristics for controlling the physical properties of aqueous emulsions and dispersions, both in production and final use.

VEEGUM

— a purified magnesium aluminum silicate with thixotropic properties:

- ★ Permits higher solids suspensions at lower viscosities
- ★ Assures stability under wider variations of temperature and humidity
- ★ Improves texture and consistency

VEEGUM in water systems disperses hydrophobic materials without lowering surface tension — permanently stabilizes emulsions containing many types of oils, fats, and waxes — is compatible with alcohols, polyglycols, and other organic solvents, as well as certain electrolytes. It is nontoxic, non-greasy, nonirritating, opaque, white, odorless and tasteless. It is easily prepared in smooth, aqueous dispersions without heat.

DARVAN #1 and #2

— polymerized organic salts of sulfonic acids (alkyl-aryl type), they are true dispersing agents for water systems:

- ★ Disperse finely divided solids and liquids more completely over longer periods
- ★ Increase effectiveness of active ingredients through greater exposed surface areas in solution
- ★ Reduce flocs and agglomerates to ultimate particle size

DARVANS are soluble in water, have a neutral pH, and are stable toward mild acids and alkalis. Darvans are effective in concentrations as low as 0.2%, and do not appreciably lower surface tension. Darvan #2 emulsifies oils where water is the external phase providing great physical and chemical stability over a wide pH range.

OTHER VANDERBILT SPECIALTY PRODUCTS FOR THE CHEMICAL INDUSTRY

NYTAL — a talc of exceptionally fine particle size, unusual brightness, purity and consistency. **PYRAX** — widely used pyrophyllite of superior quality and purity. **PEERLESS** and **CONTINENTAL** — kaolins for industry and agriculture.

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Please send ☐ Information ☐ Sample
VEEGUM ☐ **DARVAN** ☐ **NYTAL** ☐ **PEERLESS** ☐ **CONTINENTAL** ☐ **PYRAX** ☐
(state application) _____

NAME _____

POSITION _____

(Please attach to, or write on, your company letterhead)

PRODUCTION

EQUIPMENT

Tablet Coater: A machine for dry-coating tablets, made by Kilian of Germany, is now available from PAC Division, American Roland Corp. (New York). Coating material is applied by compressing it in the dry state on a core tablet of active ingredients. Rapid, automatic and anhydrous, dry coating is claimed to be cheaper, more flexible than pan-coating methods.

Caustic Packing: Teflon suspensoid applied to individual strands of pure chrysotile Canadian asbestos makes A. W. Chesterton Co.'s (Everett, Mass.) White-Lon Style 322 mechanical packing impervious to liquid caustics. Designed exclusively for use with sodium, potassium, other strong hydroxides, it is claimed to assure tight seals on stainless steel or chrome-plated shafts without danger of seizing or scoring.

Powder Recovery: A mechanical collection system developed by Dustex Corp. (Buffalo, N.Y.) uses batteries of miniature cyclones to recover spray-dried chemical and pharmaceutical products. Available in polished stainless steel or cast aluminum, the cyclones operate with a wide range of materials, including products high in fat and sugar content.

Infrared Heaters: The far-infrared radiation produced by its Metaray industrial electric heaters, claims Edwin L. Wiegand Co. (Pittsburgh, Pa.), is more readily absorbed, more easily controlled than that from glass infrared lamps. Sheathed in Inconel, the all-metal units resist vibration and shock, minimize maintenance by self-cleaning ability to burn off splashed liquids and other contamination. They are available in ratings from 375 to 1200 watts, 120 or 240 volts.

Stainless Filters: Micro Metallic Corp. (Glen Cove, N.Y.) now offers its Surfamax permanent porous stainless steel filters at prices competitive with throw-away types. Permanence and easy cleanability of Surfamax filters, it is claimed, reduce down time, eliminate cartridge replacement costs. Standard units for removal of particles from 2 to 55 microns in size, at flow rates to 50 gpm. of water or oil, 400 cfm. of air, are available from stock.



Note the compactness of Commercial Solvents Corporation's new 225-ton-per-day Stengel Process Ammonium Nitrate Plant at Sterlington, La.

Crystalline
AMMONIUM NITRATE
FERTILIZER
in one simple step
THROUGH C & I



Actual Crystal Size

C & I can now license the new CSC Stengel Process to users and furnish complete plants to produce crystalline ammonium nitrate (33.5% N). Due to simplicity of design, capital and operating costs of these plants are substantially less than similar plants using prilling and granulating processes.

FREE FLOWING In this process, ammonium nitrate of any desired particle size can be produced in a single step. Actual spreading tests in the field have proved that this



Solidified ammonium nitrate sheet is broken into small bits by rotating spoke shaft.

crystalline ammonium nitrate is completely free flowing with a more controllable flow than competitive products.

NON-CAKING This new exclusive process produces a very low-moisture material permitting satisfactory long term storage. The coating on the particles reduces to an absolute minimum the tendency of ammonium nitrate to absorb moisture.

C & I ammonium nitrate plants using the Stengel Process can also produce limed ammonium nitrate (20.5% N) and ammonium nitrate sulfate (26.5% N). These plants are constructed at a fixed price with production and efficiencies guaranteed.

C & I can also furnish nitric acid and complex fertilizer plants (using PEC process) on this same basis.

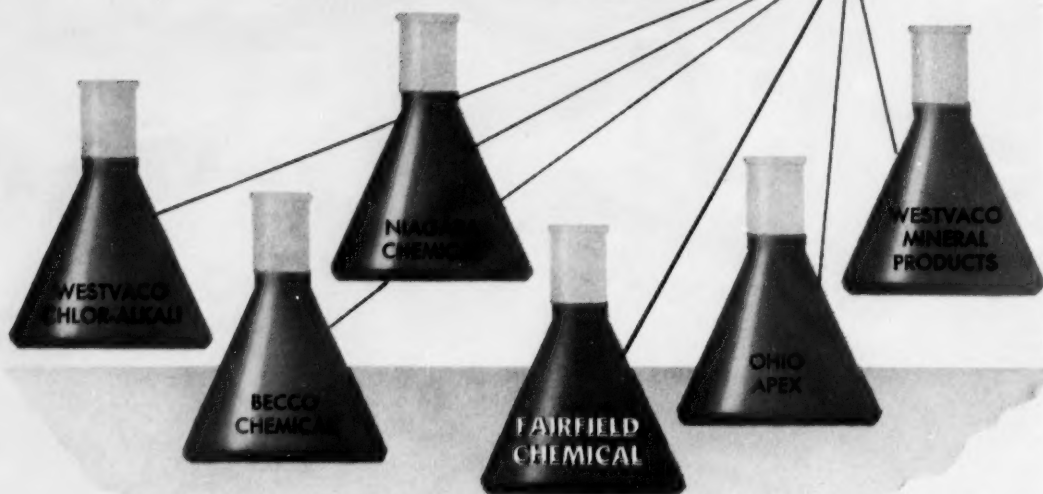
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Processing Ammonia

THE CHEMICAL AND INDUSTRIAL CORP.
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Now there are six!



Six *fmc* Chemical Divisions with ever-expanding horizons

Adding Fairfield Chemical to the FMC Chemical Divisions brings mutual advantages from which better products for agriculture and industry will inevitably result.

Fairfield brings to FMC a solid record of research accomplishment in the synthesis of the outstanding pesticide synergist — Piperonyl Butoxide. Fairfield brings production know-how on one of the most complicated organic chemicals to be produced commercially — Allethrin (synthetic pyrethrum). Fairfield adds substantial organic chemical production capacity to present FMC Chemical Divisions operations.

In turn, FMC Chemical Divisions give Fair-

field access to all the basic chemicals produced within the group . . . the benefits of coordinated research on markets and products . . . practical cooperation in selling and servicing here and abroad . . . management guidance of FMC Chemical Divisions administrative staff and its consultants . . . the backing of the resources of the entire group and the parent company.

This, we believe, is an excellent example of expansion by acquisition that benefits all with whom we do business. *To learn more about the activities of Fairfield and other FMC Chemical and Machinery Divisions, write for our fully illustrated brochure, "Putting Ideas To Work."*



Chemical Divisions

FOOD MACHINERY AND CHEMICAL CORPORATION

Administrative Offices • 161 East 42 St., New York 17


WESTVACO CHLOR-ALKALI DIVISION
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Alkalies, Chlorinated Chemicals, Carbon Disulfide

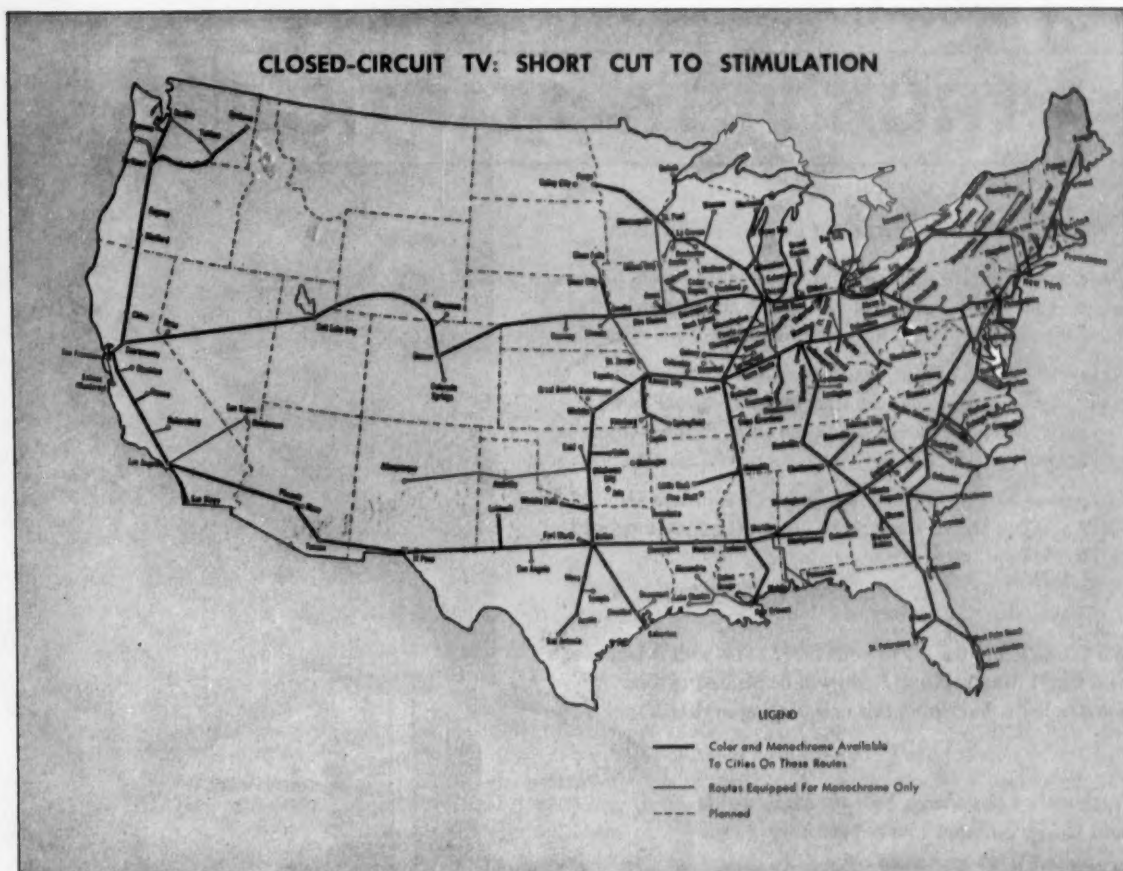

BECCO CHEMICAL DIVISION
Buffalo, New York
Peroxygen Chemicals


NIAGARA CHEMICAL DIVISION
Middleport, New York
Insecticides, Fungicides and Industrial Sulphur


OHIO-APEX DIVISION
Nitro, West Virginia
Plasticizers and Chemicals


FAIRFIELD CHEMICAL DIVISION
New York, New York
Insecticides and Organic Chemicals


WESTVACO MINERAL PRODUCTS DIVISION
New York, New York
Phosphates, Barium and Magnesium Chemicals



For High-Impact Ride—Go Coaxial

Last week, for the third time in four months, physicians across the North American continent laid aside their stethoscopes and scurried off to local hotels. At precisely 6 P.M., as Wyeth Laboratories' President Harry Howard looked on, a TV camera drolled in on seven medical specialists assembled in CBS Studio 55 in New York. One moment later, 20,000 doctors, in 66 cities were attending a closed-circuit TV seminar on streptococcal infection. Also invited to watch the program: a scattering of wholesale druggists and pharmacists.

The seminar, Wyeth's second fling at combined doctor education and low-keyed promotion, set the company back an estimated \$95,000. And although results of the subtle pitch for its penicillin product, Bicillin, won't be known for months, company sales ex-

ecutives have cause for optimism: the first seminar (which discussed hypertension and plugged Ansolysen) put Wyeth six to eight months ahead of estimated sales goals.

Wyeth is turning to CCTV because of the "tremendous congestion" in pharmaceutical communications. Other drug and chemical makers have had other reasons: Smith, Kline & French (which has sponsored local, color CCTV for five years) went in to garner doctor goodwill and prestige; Dow Chemical took to the coaxial cables last August to brief brokers on Saran Wrap plans, jet-propel their sales efforts.

With chemical industry interest in CCTV mounting, CW talked with the companies that have employed it, interviewed men who produce the shows, observed telecasts. Here, in

capsulized form, is closed-circuit television.

What Is It?

CCTV is the presentation of a private program to a selected audience, transmitted over leased lines to any of 230 (to date) cities (*see map, above*). Local lines carry the program to auditoriums in TV studios, hotels and theaters where special projectors blow the image up to theater-screen proportions.

How Is CCTV Produced?

Companies aiming to use CCTV generally hire a producing agency. Right now, three agencies are vying for the business: Box Office Television; Theatre Network Television; and Dumont. These companies line up viewing facilities, hire crews, clear network

At last!

A TRUE VINYL MASTIC!

Complete protection in a single coat—10 mils thick!

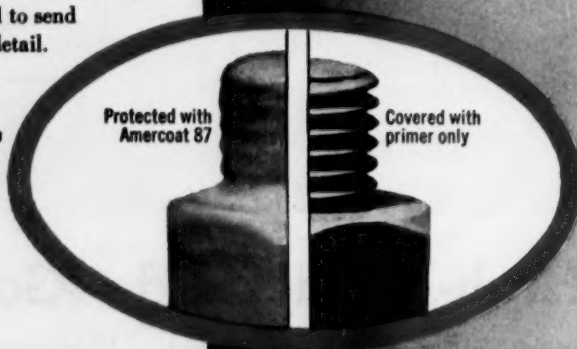
Amercoat No. 87 will cut your maintenance costs because one coat gives you the thickness and protection previously available only through the application of multiple coats.

Amercoat No. 87 is the brand new solution to an old problem, for it combines the time-tested chemical and weather resistance of a vinyl with the extra thickness that was heretofore available only in conventional mastics.

Amercoat No. 87 is easily applied with standard industrial spray equipment. Only one cross-spray coat, over a primed surface, is required for complete protection. Because Amercoat No. 87 is a true vinyl, it is not limited to black, but is available in a variety of colors.

You can save up to 50% of your labor costs with Amercoat's new vinyl mastic No. 87. We will be pleased to send you a bulletin describing this new coating in detail.

Notice that the sharp bolt threads, welds and sharp corners are completely protected with one coat of Amercoat No. 87—10 mils thick!



Amercoat

CORPORATION

Dept. B
4809 Firestone Blvd.,
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EVANSTON, ILL. • KENILWORTH, N.J. • JACKSONVILLE, FLA. • HOUSTON, TEX.

DISTRIBUTION. . . .

time (sometimes a knotty problem), arrange studio and rehearsal space, and provide the know-how of production.

What Is CCTV Used For?

Sales meetings for dealer organizations constitute by far the major use to date for CCTV, to spur dealers into all-out effort. CCTV's major asset—dramatic impact—turns the trick: the personal invitation, a huge image in a darkened room, top company officials personally addressing the dealer, all blend to convince the dealer that orders are his if he'll only get out and sell.

Institutional advertising represents CCTV's secondary use. Here, pharmaceutical firms have brought medical education to thousands of physicians. Wyeth's second broadcast, for example was counted as postgraduate study credit by the cosponsor, the American Academy of General Practice.

Case Histories

Dow Chemical last August unfurled sales and promotion plans for Saran Wrap to 300 food brokers with a 30-minute show to five cities. Brokers also witnessed NBC's hour-long CC telecast designed to sell affiliate stations on taking the "Medic" show.

Dow queried salesmen to find out what information brokers needed, wrote scripts itself, and spent some seven hours in rehearsal. The show outlined what audiences would be



BOOM AND CAMERA: They beam Wyeth's second CCTV seminar and promotion.

reached with television, magazines and radio, and how ads would create buying impulse. Market research results revealed sales potentials and quotas for each territory. Sales arguments—e. g., favorable margins, supplementary business—were also included. At the meetings, salesmen (who were briefed with scripts) displayed point-of-sale material, answered questions.

Generally, brokers liked the show and Dow observed these benefits:

- The year's advertising and promotion program was presented quickly.
- In combination with the salesman-conducted meeting immediately after the show CCTV generated an enthusiasm that "just couldn't be duplicated."
- Company-broker relations were enhanced. Talks by Dow's president and disclosure of merchandising plans made brokers aware of the company's personal interest in them.

Wyeth telecasts for both institutional and promotional purposes. The firm picks a topic in a field in which it has a valuable product. After medical association approval, a five-man committee (with two from Wyeth) selects speakers, sets limits on commercials.

In the latest show, opening speakers discussed the epidemiology and complications of "strep" infections. After considering diagnosis, the third expert presented results of treatment with a Wyeth product, a fourth reported on clinical methods of strep prevention, included results of tests on Wyeth's product. A summary address also touched on the product. Wyeth's name and drug trademark were referred to



SCREEN AND DOCTORS: Miles away, MDs updated on 'strep' infection remedies.

We've cut damage to zero since we started shipping our chemicals in DF* equipped box cars!



... and railroads furnish DF* equipped box cars at no extra charge to you!

● A chemicals company ships \$25,000 to \$35,000 worth of products at a time, in 45-gallon fibre drums weighing 250 to 270 lbs. Damage claims rose to over \$1,500 per carload! Then the company learned about DF* equipped box cars and requested them. Damage fell off to zero! Ask your railroad to furnish DF cars. They cost no more, yet eliminate damaging load shifting. Today, 42 Class I railroads can furnish DF box cars.

Specify Evans DF* equipped box cars to save you money 8 ways!

1. You eliminate damage and damage claims
2. You safely put more load in each car
3. You buy no dunnage
4. You pay no shipping rates on dunnage
5. You cut loading time and cost
6. You reduce unloading time and cost
7. You eliminate car cleaning
8. You build solid good will because shipments reach customers in factory-fresh condition

*DF means damage-free, dunnage-free . . . only Evans makes it

SEND NOW FOR FREE BOOKLET! . . . The Evans DF Loader booklet can actually save thousands of dollars a year! Write: Evans Products Co., Dept. AQ-3, Plymouth, Michigan.



... locks lading, eliminates damage and dunnage

CCTV pros

Dramatic impact—excites viewer to act.

Medium is versatile — films, charts, skits, etc., can be inserted.

Captive audience — undiverted attention; message can't be 'laid aside.'

Thoroughness—all parts of message included; nothing is skipped.

Convenience—audience, speakers need not travel far, can save time.

Frankness—with admissions controlled, company can disclose inside facts.

Economy — for large dealer chains, CCTV may prove cheaper than regular methods.

Movie reprints—later audiences can view presentation (specially edited, if desirable).

and cons

Cost—generally considered high. Reason: basically, CCTV only supplements regular promotion.

Necessity for significance — message presented must have high degree of timeliness, importance. Just 'anything' won't 'go.'

Color limits—black and white TV is of little value if color is important in display. Color 50% higher, limited to 21-in. screens.

Necessity for travel—viewers still must travel, schedule time to see show; not the case with literature.

but once each, the generic name for the product being generally used.

Post-telecast Wyeth follow-ups: detail men feature the product on the next call; direct mail relates the product to the show.

Smith, Kline & French (in contrast* with Wyeth) beams its color casts to generally one location only. Maintaining its own permanent staff and equipment, SK&F will spend about \$200,000 this year for 16 color programs. Operations, medical techniques, diagnostic

clinics are typical subject matter, and telecasting is often timed to coincide with a medical meeting.

SK&F's shows are strictly institutional; there's no product mention, no follow-up. Its gain (and Wyeth's too): the company is credited with a practical interest in graduate medical education.

How To Get Your Money's Worth

No matter how you calculate, CCTV's costs run steep. Costs are figured on a per-hour basis for equipment, men and facilities plus a fixed

* SK&F ran one black and white show: a one-hour \$95,000 seminar on heart disease for 20,000 MDs in 35 cities.



DOW FOLLOW-UP: Salesman clinches CCTV message with point-of-sale display.

Alcoa's New Steam Traced Pipe saves

30% of labor costs
Reduces material costs
Reduces insulation costs
over conventional
steam-jacketed lines

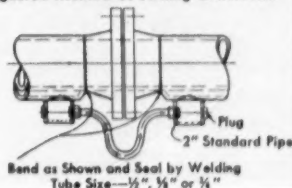
Here's a totally new product for users of steam-traced piping. ALCOA's UNITRACE® eliminates the cost of external steam jackets or steam-tracer tubes because the steam line is an integral part of the aluminum pipe!

Because of the natural corrosion resistance of aluminum, UNITRACE is well suited for handling naval stores, molten sulphur, ammonium nitrate solutions, glacial acetic acid, fatty acids, tar, pitch and similar products normally requiring steam tracing.

UNITRACE provides greatly improved heat transfer properties . . . lends itself readily to shop fabrication of standard lengths . . . can be formed easily with pipe bending tools. Pre-formed insulation will fit UNITRACE, but improved efficiency makes thermal insulation unnecessary in many cases.



Suggested Method of Joining UNITRACE



UNITRACE is available in 2 inch standard schedule 40 pipe size.

For complete information, write for *free booklet*. Use the coupon.

® Registered Trademark,
Aluminum Company of America

ALCOA 
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906-C Alcoa Building, Pittsburgh 19, Pa.

Please send me your free booklet,
UNITRACE. We use steam-traced piping for

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FOR THESE SYMBOLS OF QUALITY



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These stock points are your sources for quality materials...

When you want them... where you want them...

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SODIUM BICARBONATE

USP-X Technical

Sodium Cyanide
Potassium Cyanide
Sodium Aluminate Dry
Calcium Formate

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AMMONIUM SULFATE 17%

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Sulfuric Acid
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Ammonia Water
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from valves to ethyl alcohol.
It's really simple! Look and see...
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Purchasing executives acclaim the **BUYERS' GUIDE** of *Chemical Week* as the one indispensable buying authority. The most widely distributed and complete purchasing handbook in the market, its 860 pages are brimful of quick-to-find information to ease your purchasing headaches.

Use your copy of the **BUYERS' GUIDE** next time you need buying information in a hurry. Its four big sections are ready and willing to go to work for you. For sources of both chemicals and process equipment, the **BUYERS' GUIDE** has all the right answers.

Chemical Buyers' Guide
Week

McGraw-Hill Publishing Company
330 West 42 Street, New York 36, N. Y.

DISTRIBUTION . . .

percentage fee for the producing company. Easiest way to estimate (one hour show): \$1000 per TV studio outlet (to less than 100 persons); \$1500 per hotel outlet (to less than 1200 persons); \$1650 per theater outlet. To this, add the cost of invitations (to 10¢ each) and movie reprints (\$2/minute).

Corner-cutting just won't work. You are likely to find that quality drops off a lot faster than cost. Dow ad man Bodensiek believes that it pays to hire a top-notch director, actors, props, as many cameras as necessary to obtain interesting angles, etc. But, as CW found when talking to Box Office TV's vice-president, William Rosensohn, and others, there are ways to get your money's worth:

- **Avoid remote originations.** This introduces duplication of equipment and facilities, runs the bill skyward, and contributes only a dash of glamor.

- **Keep entertainment time down.** Most dealers and technical men like facts straight. One company, which tried extensive entertainment, "floppe."

- **Plan carefully, far in advance.** Costly overtime construction charges, switched bookings, are eliminated. Too, the added time provides opportunity to smooth out presentations, avoid sloppy shows.

- **Tie-in with other CCTV shows.** If programming can be arranged so that further use of outlets occurs within 30 days (before or after), some 30 to 50% of basic production costs can be saved. This means as much as \$6-8000 savings for a 30-station network.

Another tie-in possibility: a company planning a national network program (like Dow's *Medic*) should consider a closed-circuit show in conjunction with the network's own program promotion. This can result in a "bargain" CCTV run.

- **Use long lines efficiently.** An important part of the over-all cost is the rental of the coaxial cables (\$1.25 per mile per hour, including sound). If you have to hire long stretches to reach certain locations, consider intermediate points. These add only outlet and local loop rental expenses.

- **Cash in on Kinescope.** Both Dow and Wyeth have found the Kinescope (movie) a valuable by-product, much in demand for repeated showing. Some consideration should be given



Look to ENJAY for better iso-octyl and decyl alcohols for better plasticizers

Sebacates... Phthalates... Azelates... Adipates

All of these high-quality, uniform plasticizers were originally developed from Enjay iso-octyl and decyl alcohols and are conveniently available under the brands of leading plasticizer manufacturers.

More and more—superior plastics are being made with these effective and economical plasticizers.

Be sure of dependable high quality—ask your supplier for these plasticizers made from Enjay Alcohols. Enjay and its affiliates do not manufacture plasticizers.



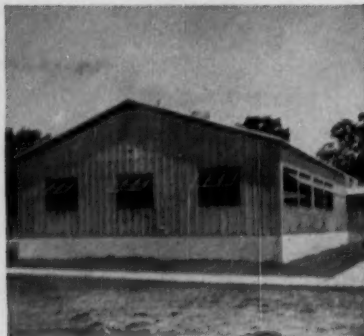
35 successful years
of leadership
in serving industry

**ENJAY
COMPANY, INC.**

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ENJAY IS THE PIONEER AND THE WORLD'S LARGEST PRODUCER OF ALCOHOLS BY THE OXO PROCESS

Build on a tight budget with no regrets



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in designing the TV show to also produce a good film.

• **Scheduling:** If you must use theaters, try for morning telecasting. Afternoon and evening rentals run higher.

Payoff?

Most firms that have used CCTV, CW finds, are satisfied, believe it pays. The dealer stimulation that CCTV's dramatic impact affords will undoubtedly lure many more onto the coaxial cables; even now, the number of shows is growing. Restricted open-circuit telecasting (scrambled to provide privacy), too, looms in the future. But whether or not you'll ever use CCTV depends on the circumstances. For some it pays; for others it's questionable.

Neglected No Longer

"In view of the competition for attention among the increasing number of new developments, effective public relations can contribute substantially to the successful development and initial marketing success of new products."

These, the words of Commercial Solvents' Sydney Ellis, spell out a feeling that has been growing among chemical development men lately. And next Thursday (March 17), Ellis, as program chairman, and his fellow members of the Commercial Chemical Development Assn. will be devoting an entire day of talk and thought to the subject. The occasion: CCDA's 11th

annual meeting, this time beamed on "Public Relations in New Product Development."

No far-afield search for subject matter, next week's meeting has developed logically, almost inevitably, from two converging currents of thought:

• On one hand, as Ellis phrases the situation: "The chemical industry, with its high proportion of technicians, has been concentrating on the technological aspects of development . . . many of us have to be educated on public relations outside the chemical industry."

Ellis has solid backing for his opinion; more than a year ago, CCDA members admitted their lack of knowledge of public relations. In a poll for desirable program material, members named public relations as a topic that all sales development men should know more about.

• Public relations men, on the other hand, are only too happy to help the sales development men get wise to the ways of the world at large. Reason: they consider the distribution of chemical development information as a joint enterprise. Perhaps more than is the case with most corporate activities, new products and developments involve the cooperative efforts of research, management, development and public relations departments.

Long Pull: The peculiarity of the chemical development problem, seen through public relations eyes, stems largely from its long-term, heavy investment nature. From research to launching stages, sound relations require a delicately balanced flow of information.

Next week's meeting will attempt to develop a better appreciation of this delicate balance all along the development team line. Some specific topics to be explored:

- Policy with respect to research and development publicity.
- Publicity in launching new products.
- Coordinating publicity in new product development.
- Communication with the financial community.

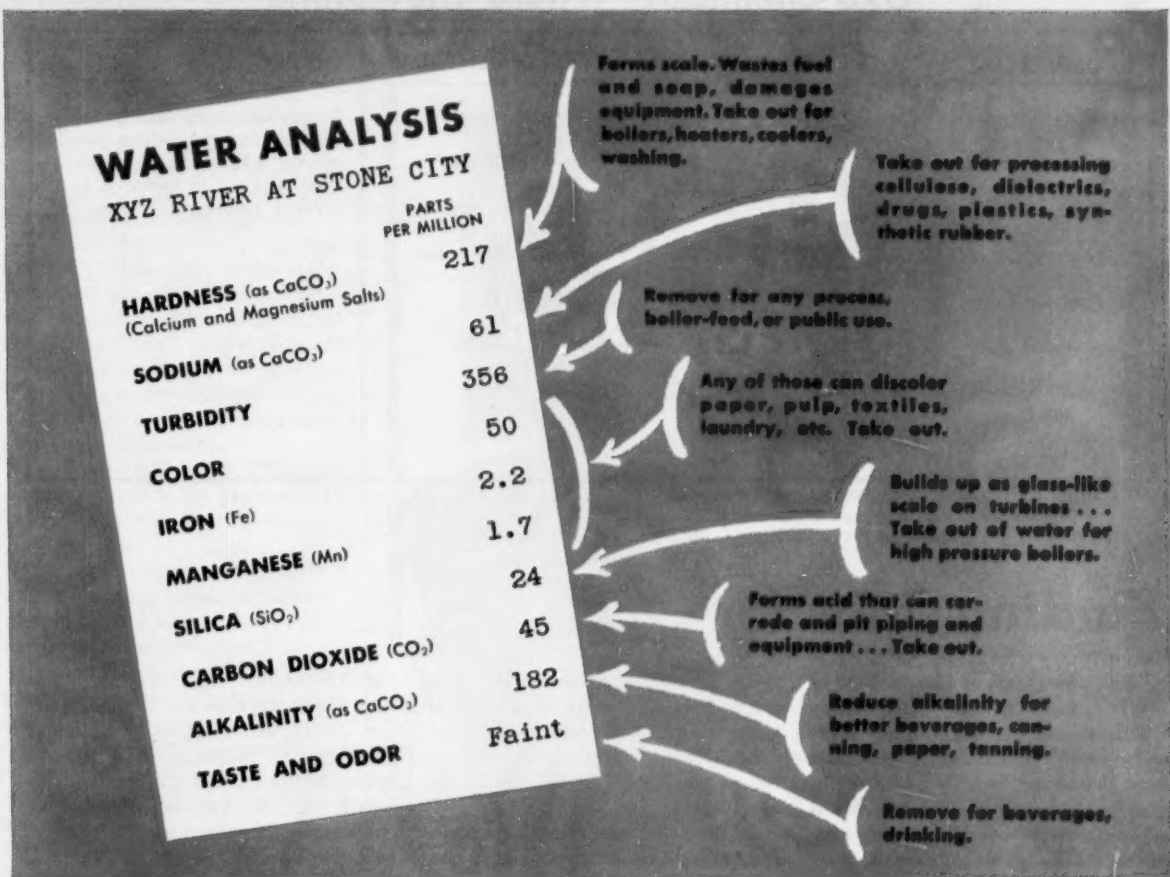
As Ellis says, "In many ways, this area of public relations in new product development has been a neglected one." After next week's session, the subject should be neglected no longer.



ELLIS: 'Outside impressions are influenced by ability to supply information.'

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RESEARCH

Oxo Chemicals—Where They Stand

COMMERCIAL	SOURCE	DEVELOPMENTAL	FUTURE
primary amyl alcohols	CC	neopentyl glycol	A profusion of aldehydes, alcohols and derivatives possessing 3-19 carbons is possible. It's up to research to develop commercial uses.
primary decyl alcohols	NJ, CC, G,* IND*	hydroxypivaldehyde	
primary tridecyl alcohols	N.J, CC,* G*	isobutyl isobutyrate	
isobutyraldehyde	TE	trimethylpentanediol	
n-butyraldehyde	TE	nonyl alcohol	
isobutyl alcohol	TE	iso-octanoic acid	
2-ethylhexanol	TE		
mixed iso-octyl alcohols	NJ, CC,* G, IND		

Key: CC—Carbide and Carbon Chemicals; NJ—Standard Oil of NJ; TE—Tenn. Eastman
G—Gulf Oil; IND—Standard Oil of Ind.

* Expected to go onstream in the near future.

Finding Jobs for Oxo

As new Oxo plants of Standard Oil of Indiana and Carbide and Carbon Chemicals were going through their early paces* last week, two things were happening in Oxo-chemicals research: producers of the oxygenated aliphatics were breaking into hot pursuit of more and bigger uses for their wares; potential consumers—spurred by increasing availability and slipping costs—were intensifying their efforts to find work for a broad range of possible new Oxo products.

On the success of these complementary activities rests much of the Oxo process' hopes for commercial advancement.

A good share of Oxo application studies center around the high-volume commercial materials (see chart) already being turned out by Standard Oil of N.J. (at Baton Rouge, La.), Gulf Oil (Port Arthur, Tex.) and Tennessee Eastman (Longview, Tex.), in addition to Carbide and Standard of Indiana.

But increasing attention is being invested in the myriad other still undeveloped compounds that are within the scope of Oxo's synthesis abilities.

Among volume Oxo products that are still under investigation is iso-octyl

alcohol, which, at about 21¢/lb., is an entrenched raw material for plasticizers (e.g., di-iso-octyl phthalate), special surface-active agents, and non-volatile esters of 2,4-D and 2,4,5-T weed killers.

Looking beyond these immediate outlets, Indiana Standard—whose new plant is an iso-octyl alcohol producer—is piloting iso-octanoic acid and its sodium salt. The former is produced by wet-oxidation of the alcohol, while the latter is made by caustic fusion of the alcohol at elevated temperatures. These products, the company believes, will compete favorably with non-Oxo iso-octyl alcohol in the manufacture of paint driers, vinyl stabilizers and plasticizers, etc.

Other iso-octanol derivatives the company is looking at include iso-octyl chloride and nitrate (synthesis intermediates), and iso-octylamine (surface-active agent and starting material for the production of possible rubber accelerators).

Carbide's primary amyl alcohols (a mixture of pentanol-1; 2-methylbutanol-1 and 3-methylbutanol-1), which comprised the first tank-car shipment out of the recently commissioned 60-million-lbs./year-capacity Texas City plant, are trying for expanded use in a spectrum of applications. Priced in

the 17-19¢/lb. range and featuring high reactivity, they are intermediates for surface-active agents, synthetic lubricants, oil additives, catalysts, corrosion inhibitors, and ore flotation reagents (e.g., the xanthate serves as a collector in the concentration of non-ferrous minerals).

Amyl ester plasticizers, moreover, have strong cost appeal for producers of vinyl chloride resins. Offsetting their comparatively low cost, however, is a relatively high degree of volatility. Where this shortcoming is critical, amyl esters often lose out to higher-molecular-weight materials.

That's one of the reasons decyl alcohol is gaining ground as a commercial Oxo chemical. Within the past year, several new decyl-ester plasticizers have reached market, and development along this line is far from complete. Monsanto, Decec Products (Cambridge, Mass.) and Ohio-Apex (division of Food Machinery & Chemical Corp.) are actively carrying on research in this field.

High-molecular-weight Oxo alcohols also loom as intermediates in the preparation of nonionic and anionic surface-active agents by sulfation or reaction with ethylene oxide. Tridecyl alcohol has, in addition, been used to make tridecyl mercaptan, an ingredi-

* At Wood River, Ill., and Texas City, Tex., respectively.

ent in GR-S rubber manufacture.

Comers: In the long run, however, the Oxo process is expected to add many new names to the roster of commercial chemicals. In the offing are such currently experimental compounds as neopentyl glycol, hydroxypivaldehyde, isobutyl isobutyrate and trimethylpentanediol, all under development by Tennessee Eastman.

- Pilot-plant quantities of neopentyl glycol (45¢/lb.) are being evaluated in the preparation of polyester resins, modified alkyds, low mono-ester hydraulic fluids, ester-type vinyl-film plasticizers, polymeric plasticizers,* and low-temperature lube-oil additives. The compound also exerts an insect repellent effect.

- Hydroxypivaldehyde (55¢/lb.) is an intermediate in the production of calcium pantothenate, one of the vitamin B complex.

- Isobutyl isobutyrate (75¢/lb.) has possibilities as a specialty solvent, perfume or flavoring ingredient and in insect repellent formulations.

- Trimethyl pentanediol (40¢/lb.) reacts with maleic or phthalic anhydride to form alkyd resins, with dicarboxylic acids to yield compounds that are potential lube-oil additives. Like neopentyl glycol, it is of interest as an insect repellent.

In the more distant future, additional candidates can be expected to appear as markets for their talents develop. Oxo-chemical makers are not willing to reveal what they expect these products will be. But the nature of the process defines, within broad limits, its probable progeny.

Olefin Keyed: For one thing, feedstock is restricted to olefins (that are converted into aldehydes by the addition of carbon monoxide and hydrogen), so the end product depends on the olefins available. Low cost and high purity are prime olefin requirements, whether the feedstock is purchased (as in Carbide's case) or obtained from a captive source (e.g., Indiana Standard's Wood River refinery).

Furthermore, the chemicals are yielded as mixtures that cost money to fractionate, if pure products are required.

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* By reaction with dibasic acids such as adipic or phthalic.

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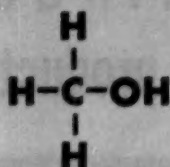
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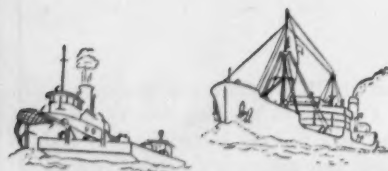
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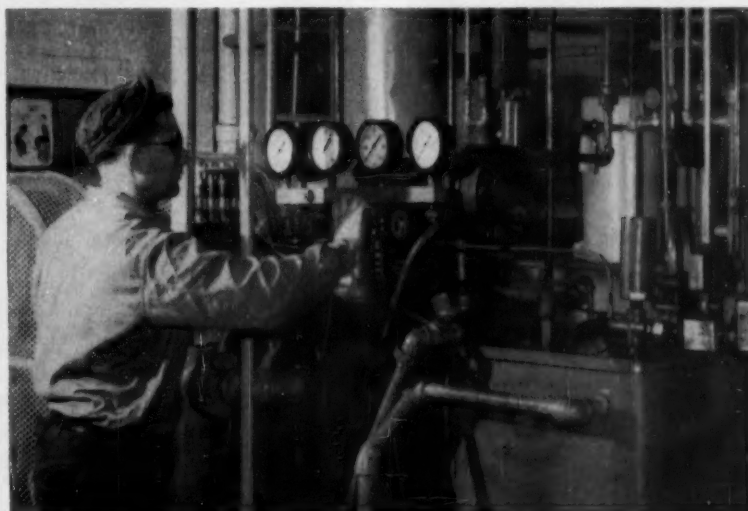
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March 12, 1955 • Chemical Week

RESEARCH



OXO PILOT PLANT: Under a 19-carbon roof, room for a prodigious family.

feedstock, there's a prodigious family of chemicals that can be Oxo produced. Experts put the immediate top practical product limit at 15 carbons, although compounds containing 19 carbons have been reported.

Long Haul: Standard of Indiana took up the German-pioneered process in 1946 and spent five years of intensive laboratory and pilot-plant research at Whiting, Ind., before mapping plans for an Oxo plant. Completion of the plant reportedly was delayed by slow deliveries, equipment difficulties and extended trial operations. Carbide, too, operated an Oxo pilot unit (at South Charleston, W. Va.) for several years before blueprinting the Texas City plant.

Both companies are now safely over these trials. In step with Carbide, Indiana Standard recently shipped the first tank car of its initial Oxo product (iso-octyl alcohol), expects to follow up soon with nonyl and decyl alcohols.

Like their predecessors in Oxo chemistry, both firms foresee a growing market for low-priced oxygenated aliphatics. The accuracy of this forecast, though, will depend largely on the success of researchers' hunt for new Oxo-chemical uses.

Liquid Semiconductor: Electrical semiconduction, by now a well-known trait of solids like germanium and silicon, also occurs in molten metallic sulfides, according to new findings at Carnegie Institute of Technology Metals Research Laboratory. Profes-

sors G. M. Pound and Gerhard Derge, working on Atomic Energy Commission electrochemical studies of non-aqueous melts, made the discovery, are trying to apply it to the solution of liquid-structure problems.

Infrared Course: For novitiates in infrared instrumentation, Massachusetts Institute of Technology has scheduled an intensive program in infrared spectroscopy for the 1955 summer session. The course will be given from July 18 to July 29, includes a week each on technique and applications. Further information is obtainable from E. H. Huntress, director of the school's summer session, Cambridge, Mass.

Canadian Lab: Basic research in textiles will be the main goal of a \$1.5-million laboratory now under construction at Kingston, Ont., by Du Pont Co. of Canada, Ltd.

Lab Monitor: Detection of radioactive floor contamination is reportedly eased by a new, portable, battery-operated monitor developed at the University of California's Los Alamos scientific laboratory. The instrument is pushed over the floor like a vacuum cleaner, replaces the services of a monitoring technician with the usual small-area probe. Designed by the laboratory's Mark Tattan, the monitor is known as Model FM-1, detects radioactive materials of the alpha-emitting variety.

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RESEARCH



LANGDON (left) AND JACKSON: Products of their new synthesis are . . .

Testing a Theory

"Make it for less than \$1/lb.," avers one widely heeded school of commercial chemical development, "and you will have no trouble finding customers for almost any compound." This theory was once again put to the test last week as Wyandotte Chemicals released research quantities of several substituted pyrazines and piperazines. Behind the new cyclic diamines, the company states, are recently developed synthesis methods that could turn out commercial-scale quantities of these products for "\$1 or less per lb."

The materials in question are the 2-methyl- and 2,5-dimethylpyrazines and piperazines. The dimethylpiperazine, in addition, is available in two stereoisomeric forms: a novel* free-flowing, white crystalline *trans* isomer (melting at 118 C); and a colorless liquid *cis* isomer (freezing at 18 C) that's soluble in both water and hydrocarbons.

A solid mixture of the isomers, containing about 75% of the *trans*, is also available for potential applications that can do without a high degree of starting-material specificity. The mixture, of course, would cost less than its pure components.

Applications for the piperazines and pyrazines are largely speculative

at this point. About the only significant outlets for the chemicals are in pharmaceutical manufacture, where pyrazine derivatives have been used in the synthesis of sulfa drugs and piperazines have a place in the production of antihistamines and anthelmintics. Demand for piperazine is nicely satisfied by several producers including Carbide, Fairmount Chemical (Newark, N. J.) and Distillation Products Industries.

Sporting a new low price tag,* compounds of both families will be able, believes Wyandotte, to gain entry to a great many more potential users. Potential large-scale piperazine uses, envisaged by the company, are in the preparation of:

- Polyamide resins formed by reacting piperazine with dicarboxylic acids. Sebacic acid, for example, reacts to form a polymer that has been studied (by Bell Telephone researchers) as an impregnant for electrical-cable sheathing cloth.

- Agricultural fungicides such as 1,4-bis(4-nitrosophenyl)-piperazine, covered by patent 2,545,176 (assigned to Standard Oil Development). Monsanto probes found emulsions of 1-(4-isopropylbenzyl) piperazine to be effective in agricultural sprays, livestock drinking water treatment, and

* That differs from most amines on two counts: it's nonhygroscopic, has little tendency to absorb carbon dioxide from the atmosphere.

* Piperazine now costs about \$2.50/lb. in drums and \$2/lb. in lots of a ton or more; these costs are based on contained chemical.

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PROPARGYL HALIDES $\text{HC}\equiv\text{CCH}_2\text{X}$	Three centers of reactivity. Chemical intermediate for terpenes and pharmaceuticals, etc. Agricultural uses as soil fumigant, etc.	N-METHYL-2-PYRROLIDONE $\begin{array}{c} \text{H}_2\text{C}-\text{CH}_2 \\ \quad \quad \\ \text{H}_2\text{C} \quad \text{C}=\text{O} \\ \\ \text{N} \\ \\ \text{CH}_3 \end{array}$	Powerful organic solvent for acrylonitrile polymers and copolymers, cellulose triacetate, etc. Selective solvent for acetylene in natural gas. Spinning agent for polyvinyl chloride solution.
2-BUTYNE-1, 4-DIOL $\text{HOCH}_2\text{C}\equiv\text{CCH}_2\text{OH}$	Reacts as a glycol and di-substituted acetylene. Chemical intermediate for solvents, plasticizers, plastics, etc. Corrosion inhibitor and stabilizer for halogenated compounds.	N-VINYL-2-PYRROLIDONE $\begin{array}{c} \text{H}_2\text{C}-\text{CH}_2 \\ \quad \quad \\ \text{H}_2\text{C} \quad \text{C}=\text{O} \\ \\ \text{N} \\ \\ \text{CH}=\text{CH}_2 \end{array}$	Will copolymerize with almost all vinyl monomers. Permits modification of many properties in existing homopolymers. Gives control of hydrophobic and hydrophilic properties of products.
1,4-BUTANE-DIOL $\text{HOCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$	Reacts as dihydric alcohol. Chemical intermediate for polyesters, polyurethanes, polyamides and cyclic compounds. For use in plasticizers, resins, fibers. Solvent. Humectant.	POLYVINYL-PYRROLIDONE (PVP) $\left[\begin{array}{c} \text{H}_2\text{C}-\text{CH}_2 \\ \quad \quad \\ \text{H}_2\text{C} \quad \text{C}=\text{O} \\ \\ \text{N} \\ \\ \text{CH}-\text{CH}_2 \end{array} \right]_n$	Binder, stabilizer, detoxifier, protective colloid, thickener, film former. Physiologically compatible. Wide solubility range. For use in pharmaceuticals, cosmetics, foods, detergents, dye stripping, synthetic fiber additive, size component, lithography, agricultural chemicals, etc.
BUTYROLACTONE $\begin{array}{c} \text{H}_2\text{C}-\text{CH}_2 \\ \quad \quad \\ \text{H}_2\text{C} \quad \text{C}=\text{O} \\ \diagup \quad \diagdown \\ \text{O} \end{array}$	Powerful organic solvent for polyacrylonitrile, cellulose acetate, polystyrene, etc. Selective solvent for acetylene in natural gas. Chemical intermediate for aliphatic and cyclic compounds.		

Until the new plant at Calvert City, Kentucky, is completed, these products are available in quantities up to tank cars from the GAF pilot plant and semi-works at Linden, N. J.

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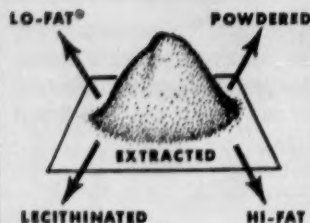


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RESEARCH

in countering such livestock diseases as actinomycosis and furunculosis. Many piperazine derivatives have, in addition, been screened by U.S. Dept. of Agriculture for insecticidal and insect repellent activity.

- Rubber accelerators—e.g., 1,4-bis(thiazolyl)-piperazines (as well as the thiazolyl and thiocarbonyl derivatives) were discovered by Firestone Tire and Rubber chemists to function as vulcanization promoters. Possible rubber chemicals resulting from the reaction of piperazine with sulfur chloride have been looked into by Du Pont workers.

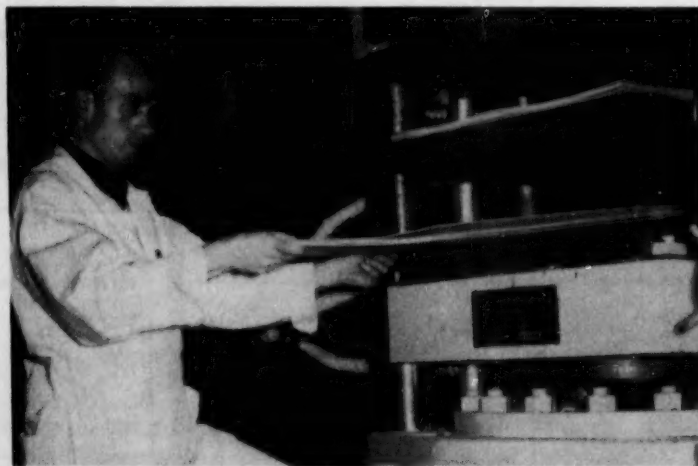
- Corrosion inhibitors. Dow researchers have obtained a patent (2,164,564) describing piperazines as corrosion inhibitors in engine cooling liquids. In the same vein, another Dow patent (2,441,793) claims the stabilization of alkylene glycols (against chemical and thermal decomposition in the 200-300 C range) by the addition of small quantities of 1,4-piperazine diethanol.

Piperazines are also known to form surface-active agents (by interaction with ethylene oxide and alkyl halides), analgesics and antispasmodics (e.g., 1,4-disubstituted derivatives), and solvents (1,4-diformyl and 1,4-diacetyl piperazines, for instance, dissolve polyacrylonitrile).

Piperazines, too, are of interest as solvents. Wyandotte expects them to provide intermediates for new quaternary salts, find use as synthetic rubber modifiers. In the latter capacity, vinyl derivatives (analogous to vinylpyridine) are indicated.

Wyandotte isn't disclosing the new low-cost synthesis route pioneered under the leadership of Donald Jackson (supervisor of organic research) and William Langdon (section head in organic research). But there's no law against speculation. The consensus: a ring-closure reaction based on ethylenediamine.

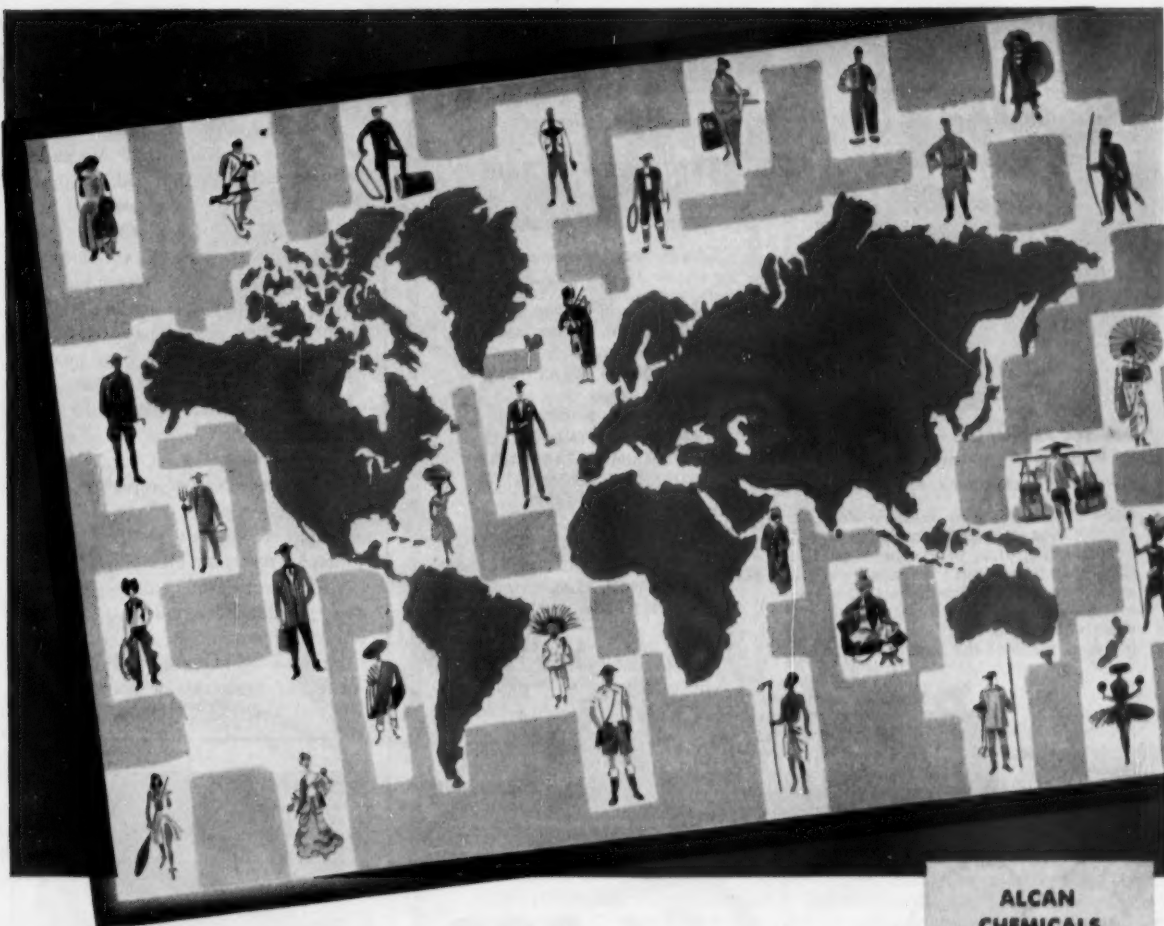
Such a reaction, a condensation of ethylenediamine with diacetyl, is a well-known direct approach to piperazine. It's one of a number of related condensations of α,β -diamines with α,β -dicarbonyls. A number of other techniques—e.g., autocondensations of α -primary aminocarbonyls—are also known and worth considering. Piperazine



Pressing for New Products

A BOOST for Canadian forest products research was the recent completion of MacMillan & Bloedel's new \$250,000 lab at the company's Harmac pulp mill on Vancouver Island. The hot-press (above), putting the squeeze on a

plywood board, is helping to implement research into a range of new wood and wood-derived products. Chemical studies are concentrating on the development of waxes, anti-oxidants, essential oils, tanning agents, etc., in woods.



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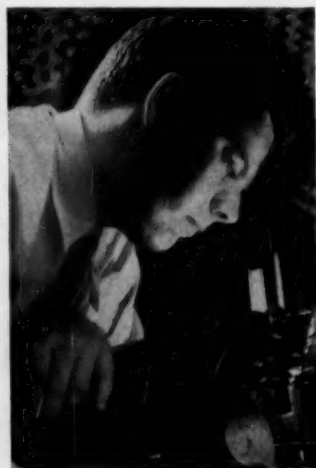
RESEARCH

zines may be obtained from pyrazines by hydrogenation.

One technique, however, is definitely out of contention. Wyandotte reports that it is not making piperazine by reductive amination of sugar (CW, Sept. 11, '54, p. 49).

Potential consumers of the heterocyclics probably won't worry too much about how they are made. If Wyandotte's hopes are realized, they will be too busy seeking process spots for a variety of relatively low-cost substituted heterocyclics that could be in the offing.

New Source: Newly reported results of research at Chas. Pfizer & Co. pose a threat to India's position as sole source of reserpine alkaloid. The drug, used in the treatment of hypertension and psychiatric conditions, was isolated by a team of Pfizer chemists from *Rauwolfia heterophylla*, a Central American herb. Major source of re-



Seen for the First Time

WHAT PHYSICIST Benjamin Roberts of General Electric's Schenectady, N. Y., research laboratory is seeing for the first time are peculiar "tiger stripes" (*background, above*) on crystals of bismuth manganese alloy. Rendered visible by new techniques, the zigzag pattern represents areas of alternating magnetic polarity, is a potentially valuable tool for metals research.



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Properties

Molecular Weight	31.06
Boiling Point at 760mm, °C	- 6.79
Flash Point, Tag Open Cup, °F	34 (30% sol)
Density at 20°C	0.912 (30% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6 (30% sol)

2 DIMETHYLAMINE $(\text{CH}_3)_2\text{NH}$

Uses

Raw material in manufacture of thiuram sulfide-type vulcanization accelerators and of dimethyldithiocarbamic acid salts used as fungicides. Neutralizing and solubilizing agent in preparation of concentrated solutions of 2,4-D salts. Manufacture of anti-malarials.

Properties

Molecular Weight	45.08
Boiling Point at 760mm, °C	6.88
Flash Point, Tag Open Cup, °F	54 (25% sol)
Density at 20°C	0.921 (25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.7 (25% sol)

3 TRIMETHYLAMINE $(\text{CH}_3)_3\text{N}$

Uses

Preparation of long-chain quaternary ammonium compounds used as softeners, lubricants and waterproofing agents for textiles. Used with benzoyl peroxide to "set" methacrylate resins. Synthesis of cationic surface-active agents.

Properties

Molecular Weight	59.11
Boiling Point at 760mm, °C	2.87
Flash Point, Tag Open Cup, °F	38 (25% sol)
Density at 20°C	0.913 (25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6 (25% sol)

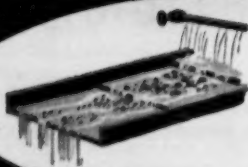


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RESEARCH

serpine currently is *Rauwolfia serpentina*, a plant that must be imported from India. Aside from reserpine, four previously unreported constituents of *Rauwolfia heterophylla* were found. They are rauwolsine, yohimbine, ajmalicine and heterophyllin. The last named is an alkaloid that, unfortunately, does not possess the hypotensive and sedative properties of reserpine. The Pfizer study covered more than six months.

Newly Tagged: New radiochemicals available from Schwarz Laboratories, Inc. (Mount Vernon, N.Y.) include C^{14} -labeled glycine, L-alanine, L-proline, L-serine, L-threonine and L-valine. They're intended for biochemical research.

Purity for Sale: Reagent quantities of highly pure thioacetamide are newly available from J. T. Baker Chemical Co. (Phillipsburg, N.J.). The compound, a convenient source of sulfide ion for analysis purposes, may help chemists get away from their traditional reliance on hydrogen sulfide for this purpose.

Step Up?

A role in explosives production may be shaping up for pentaerythritol trinitrate, subject of recent synthesis research at the U.S. Navy's Allegany Ballistics Laboratory (Cumberland, Md.), operated by Hercules Powder.

So far, the trinitrate has been obtainable by multistep laboratory procedures. Now, a team of researchers* has reportedly worked out a one-step mixed-acid nitration that results in high (46-51%) yields of the trinitrate. Concomitant 40-30% yields of tetranitrate (PETN)—useful both as a drug and as an explosive—are obtained.

A nitration grade of pentaerythritol (supplied by Trojan Powder Co., of Allentown, Pa.) and an acid-balance of 80% nitric-80% sulfuric enabled the group to accomplish their synthesis feat. Lower acid concentrations are said to affect yields adversely; higher nitric strength (90%) increases tetranitrate yield at the expense of trinitrate.

Further data are currently under security wraps. But the process is said to be commercially feasible.

* Comprised of A. T. Camp, N. S. Marans, D. E. Elrick and R. F. Preckel.



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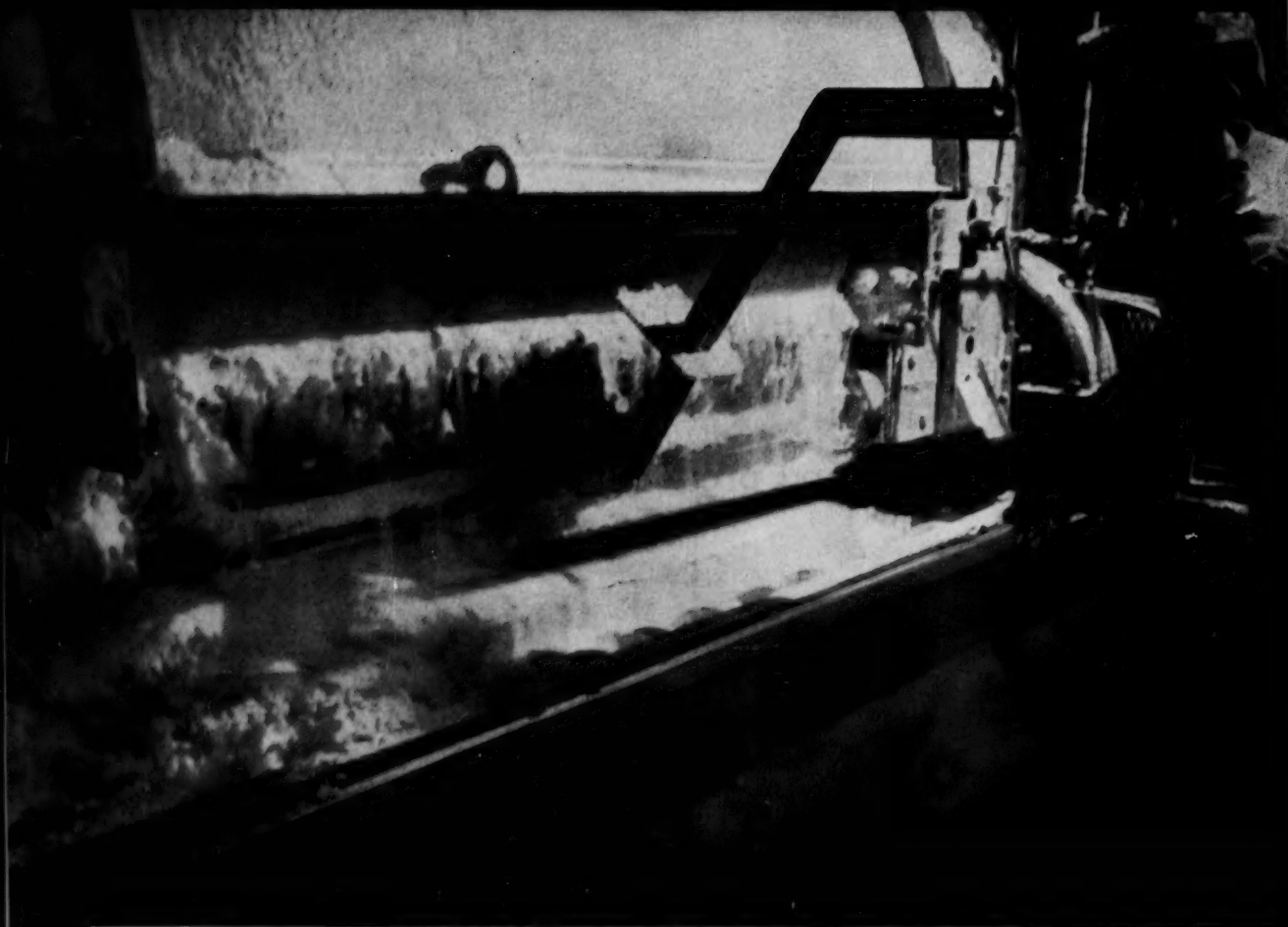
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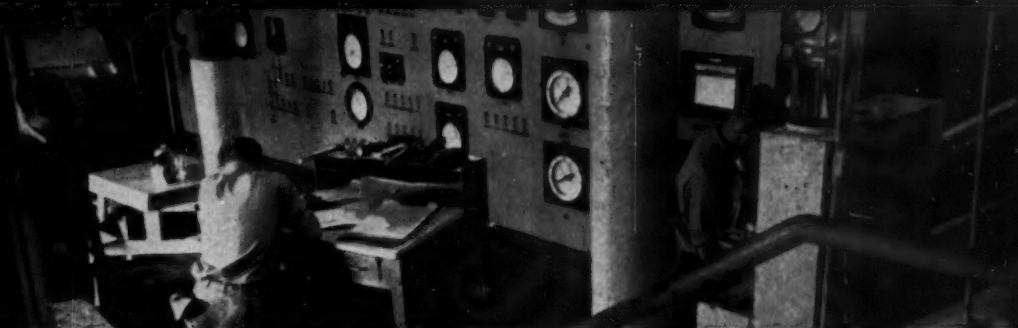
TWIN DRUM DRIERS process sodium phosphate from mixing tank and pass it into elevator which moves it into position for screening.

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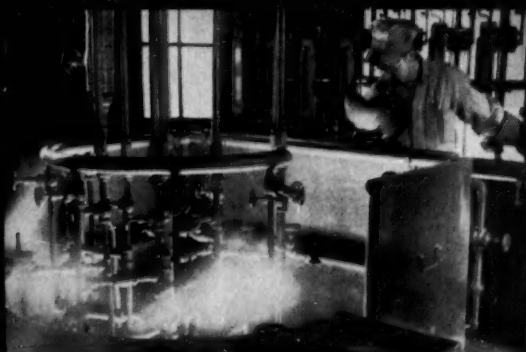
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Corn is only one example. Actually, there will be many applications for this nitrogen: as fertilizer for other feed and fiber crops; as a protein source for feed supplements; for industrial uses such as the manufacture of plastics, synthetic fibers, pharmaceuticals, and in petroleum refining.

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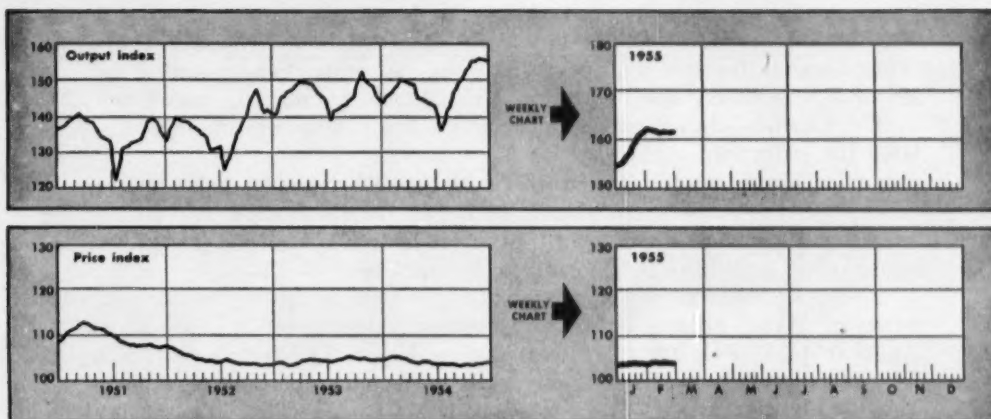


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MARKETS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
 CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-1949 = 100)	162.0	161.7	150.3
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.1	104.2	104.6
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	381.9	382.4	269.1

MONTHLY INDICATORS—Employment (Thousands)

	Latest Month	Preceding Month	Year Ago
All Manufacturing	12,528.0	12,686.0	13,002.0
Non-durable Goods	5,328.0	5,421.0	5,386.0
Chemicals and Allied Products	528.3	528.2	539.5

MARKET LETTER

With this issue *CW* unveils a completely revised output index (*see above*), the end result of more than a year's work by McGraw-Hill economists and statisticians. The goal, now reached, was to present market analysts with a new statistical tool—one that would more precisely trace the pattern of chemical production in the U.S.

CW, about four years ago, introduced the first weekly measure of variations in chemical output, and the new chart, of course, continues this unique service. One of the important changes, however: base period now used is the average of 1947-49, same as most significant federal and private allied industries indexes.

It's not too difficult to plot fertilizer demand—one simply looks at a calendar. Take ammonium sulfate, for instance. Right now fertilizer mixers are out in force, buying in anticipation of upcoming spring planting calls.

But although there are a few areas in the country where moderate amounts of the material are available on a spot basis, some sellers of synthetic—as well as coal-derived—ammonium sulfate have hung out the "sorry, temporarily sold out" sign.

The step-up in demand, however, comes at a propitious time. Recent government figures on coke-oven sulfate indicate that total U.S. production for December was up 6.5% over the previous month. And though it isn't official yet, January's tally will be close to 159 million lbs.—a near-2.5% hike over December. February's daily output rate, too, will likely prove to have been even more brisk.

Better movement to newer epichlorohydrin outlets is the ascribed reason for lower prices this week. A 4¢/lb. cut—initiated by major U.S. producer Shell Chemical, brings tank car-quantity tags down to 37¢. Carbide—in epi marketing only about a year—immediately emulated the reduction.

Though most of the synthetic glycerine by-product today filters into epoxy-type resin manufacture, as it has for some time, it's taking wider strides toward becoming a bustling industrial chemical. One growing market: stabilizer in chlorinated insecticides.

There's no threat of an epichlorohydrin shortage on the horizon, however. Why? Shell is poised to up glycerine production by 25 million lbs./year (*CW, Feb. 19, p. 83*), at its new Norco, La., installation, and Dow is expected to add a like amount from its now abuilding Freeport, Tex., glycerine plant.

Western formaldehyde consumers are reaping some price benefits, result of a long time-simmering controversy between sellers' East and West Coast sales offices (*CW Market Letter, Jan. 1*). In a surprise move—considering the good volume of business on the books—producers, late last week, reduced Western tags 20¢/cwt. on uninhibited and 15¢/cwt. on inhibited formaldehyde.

When Zone 1 (East) prices were upped 50¢/cwt. a week or so ago, Zone 2 (West) schedules were not altered. This, in effect, clipped the differential (for methanol-free material, for example), between the two areas from 95¢ down to 45¢/cwt. The latest move, now cuts the difference to a mere 1¼¢/lb.

New postings on the uninhibited now read \$3.50/cwt., East; \$3.75/cwt., West, both on a tank car basis.

Lower prices on some higher phosphates are in effect this week. Sodium tripolyphosphate and sodium tetrapyrophosphate are two that are pressured by the sharp competition for markets foretold last fall (*CW, Oct. 30, '54, p. 90*).

Tripoly, important synthetic detergent ingredient, is being quoted at \$7.72½/cwt. (c.l.), down 32½¢ from the previous price, while the pyrophosphate is selling for \$7.37½/cwt. compared with the former \$7.90-tag.

Recent, and upcoming, expansions in U.S. tripoly production—which will likely push this year's total to a near 1.2 billion lbs.—is regarded as one prime cause of the lowered prices. Demand from detergent makers on the whole has been fairly sharp—but no sharper than the competition for customers by the tripoly makers.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 7, 1955

UP					
	Change	New Price		Change	New Price
Nitrogenous tankage, bulk, works ton	\$.25	\$5.25	Salt cake, dom., bulk, works (100% NA ₂ SO ₄ basis) ton	\$4.00	\$28.00
DOWN					
Epichlorohydrin, tanks, dlvd.	\$.04	\$.33	Sodium tripolyphosphate, bgs., cl., works, frt. equald. cwt.	\$.325	\$7.725
Formaldehyde (methanol-free), tanks, dlvd. West	.20	3.75	Tetrasodium pyrophosphate, bgs., c.l., works, frt. equald. cwt.	.525	7.375

All prices per pound unless quantity is stated.



THIS BIG SPLASH IS MAKING CHEMICAL HISTORY

Here's the newest of a long list of Columbia-Southern achievements in the transportation and handling of industrial chemicals. The launching, pictured at New Orleans, is of one of Columbia-Southern's new fleet of advanced-design caustic soda barges.

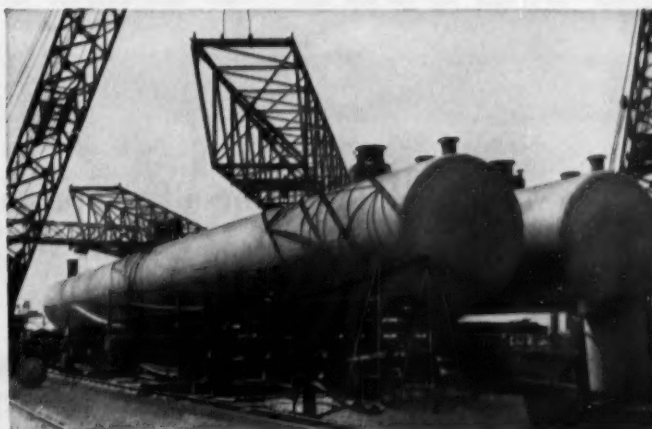
The development of the industry's most advanced barge fleet is a natural outgrowth of Columbia-Southern's pioneering research and development in transporting liquid caustic soda by both rail and water. Distinctive features of this new fleet include

newly designed electric pumps that speed and simplify unloading; Pittsburgh Fiber Glass insulation and the most modern steaming facilities; Columbia special tank lining and nickel pump fittings to prevent metallic contamination of the caustic; complete safety construction and equipment.

Setting the pace in chemical transportation is one of many contributions to the chemical industry by Columbia-Southern, a leading producer of chlorine, alkalis and related chemicals.



On Columbia-Southern's new barges, one end is sharply raked, while the other is flat. This permits far greater maneuverability. Also, more barges can be moved faster



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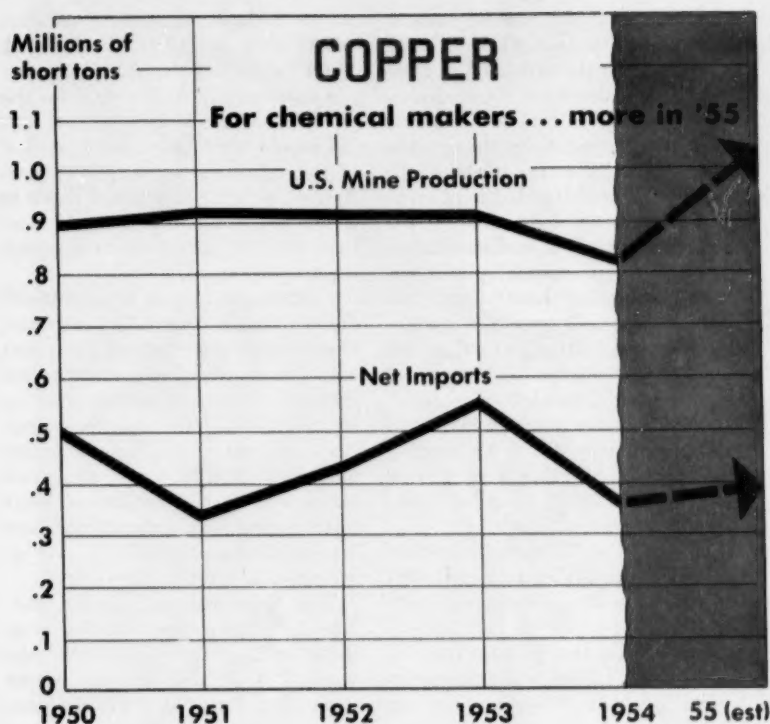
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Copper Chemical Buffet

By this week prices on just about all copper-derived chemicals have been hoisted, and though the escalating may yet continue, most customers are paying the increases with scarcely a grumble, realizing that derivative hikes are directly tied to conditions in the metal market. And in this area copper salts and oxides producers exert little influence.

Indeed, factors that have pinched basic copper supplies—and that have recently pressured the metal's U.S. price up 3¢ through a nearly two-year-old 30¢/lb. ceiling—have a global aspect. Labor disputes in African mines, skyrocketing prices of copper in Europe, diversion—and threats of diversion—of Chilean metal to better-paying markets than U.S., are some major influences.

Chemical Impact: One of the first copper chemical derivatives to feel the effects of this worldwide metal nervousness is copper sulfate (*CW Market Letter*, Jan. 15). Practically on the heels of the metal's rise here, copper sulfate sellers advanced prices by 90¢ to as much as \$1.75/cwt., depending on type. For instance, sulfate

crystals moved to \$11.25/cwt. in carlots (up 90¢); monohydrate went up \$1.15/cwt. to set a c.l., f.o.b. works price of \$18.25; and tribasic material traveled the full \$1.75 to a high of \$24.25.

Chemically pure sulfate was raised 1¢/lb. to slightly over 18¢; carbonate went up 1.7¢/lb. to a split 28-29½¢ price; and a few days later, copper chloride anhydrous and crystals were boosted 1½¢ and 1¼¢/lb., respectively. The latter is now selling at a range of 27½-28¢/lb. (bbls., c.l., works), and anhydrous at 41½¢/lb., same basis.

Higher too—by 3¢/lb.—is copper hydrate at 43¼ to 43¾¢/lb. in drums, freight allowed, East. And just a week or two ago some copper oxides joined the upward trek. Black prices jumped to a 42-47¼¢/lb. range; red oxide (97%) to 64¢/lb. in 500-lb. lots, and 90% material is now at 44½¢.

And there's more. Copper cyanide has just undergone its first price change in more than a year—up 4.8¢/lb. Typical is the new big-quantity (20,000-lb. lots or more) cyanide tag now reading 65.7¢/lb.

Further illustrating the unsettled copper picture is the squeeze in which copper sulfate producers are currently caught. A step-up in demand for spring agricultural use on the one hand, and the shortening metal supply on the other, combine to make a not-too-happy outlook. And observers don't look for any improvement in production or stocks for some time.

With sellers at the moment hard pressed to fill copper sulfate orders, some say that even the recent increases have not dampened eagerness to buy. Add the steadily increasing export demand, especially from South America, and the predicament is compounded.

Copper Capers: The stronger tone of these related materials—and the expected continuing strength—stem directly from conditions on the copper market. At one point during the past few weeks, for instance, copper quotations on the influential London Metal Exchange were described as "completely out of hand." Prices shot up to a lofty 45¢/lb., compared with the current 33¢ prevailing in this country.

That exchange's bids have simmered down lately, but the foreign fluctuations clearly emphasize the long-time steadiness of U.S. prices. Fact is, domestic producers showed reluctance to post the recent change. One reason: increasingly competitive products, such as aluminum and plastics.

It's apparent that integrated domestic producers, faced with a tightening copper supply position brought about by strikes in the U.S. and Chile (*CW Market Letter*, Aug. 28, '54), and the dislocations (now ended) in Rhodesia, had little choice but to raise prices.

The move, triggered by Anaconda Copper late this January, and emulated almost immediately by Phelps Dodge, Kennecott Copper and others, was one urged by the Chilean government. The Chileans obviously frowned on the relatively low U.S. price of 30¢, which their copper was bringing here, when European and English traders were willing to pay more. (Reports are they'd like to see the U.S. price nearer 36¢.)

But the settling of the South African mine strikes and the currently somewhat deflating London copper prices indicate one thing: before long

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MARKETS

the situation, if not back to normal, may well be eased considerably. That, at any rate, is the opinion being expressed by a number of copper industry spokesmen intent on reassuring consumers, particularly those users who are inclined to attribute the present supply/demand disruption to the Formosan developments.

The latter view is understandable; historically, the metal's production and consumption have been tied closely to just such tense periods. For example, production of domestic mines in 1942, under the stimulus of wartime needs, reached a peak of 1.09 million short tons. In the post-war stretch, output fell by roughly one quarter, but the Korean War brought the rate up again to some 900,000 tons/year.

U.S. mines in '53 turned out 924,600 short tons—higher by nearly 89,000 tons than last year's approximate 836,000. That was a fair rate, considering the strikes that plagued production. But the pickup was noteworthy in late '54—with November ranking

as the highest peacetime production month since the end of World War II. Total for the month: 88,785 s. t.

Coincidentally, U.S. output for this January was 87,350 tons. At that rate, '55 should wind up within a shadow of the industry's top output to date. By next year 11 new mines slated to be opened in the U.S. will add more than 250,000 tons/year to domestic copper production.

Further, the Copper & Brass Ware-house Assn.'s executive secretary, George Proffitt, crystallized the trade's optimism when he said recently that "not only is the number of mines increasing, but improved technology has also been adding to our copper producing capacity. Lower-grade ores can now be mined because of lower cost transportation, technical advances in concentration and refining, and refinements in prospecting methods.

"For these reasons," Proffitt continued, "future copper supplies seem ample to meet any foreseeable demands." And welcome to copper chemical makers, too, is this prospect.

NITROUS OXIDE output in '55

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Dental	5%

* CW estimate.

** Bureau of Census reports in gallons of gas.

New Mixes Puff Nitrous

With the market for food aerosols beginning to widen, nitrous oxide makers now expect output to be catapulted from last year's estimated 340 million gal. (STP) to a record-high 360 million by year's end. That's nearly 100 million more gallons than the 266 million turned out in 1951.

Underlying this year's optimism are upcoming canfuls of food mixes. They bid well to boost the aerosol packagers'

consumption of nitrous oxide in much the way that whipped cream dispensers buoyed an initial market a few years ago. Today, the trade estimates the total number of aerosol food dispensers containing nitrous oxide at 75 million units, up from an estimated 50 million last year, and 30 million in 1951.

(Bolstering the rosy prediction, Crown Can Co. at Philadelphia will



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MARKETS

more than double its capacity for food aerosol containers during the second quarter of this year. Crown produces nearly all of the aerosol food containers used in the U.S. at present.)

Up to this year, whipped cream has been the principal nitrous oxide-propelled food product. However, just emerging from the experimental or test-market stages are these potentially big-time consumers: flavored syrups, pancake batter, cake toppings, catsup, and a miscellany of vegetable and dairy-food whipped products. And add these, still in the talking stage: salad dressings, frying oils, and finely ground coffee.

It doesn't take a lot of nitrous oxide to get these products out of the container—about 5 grams is enough in a typical throw-away 7-oz. whipped cream dispenser. The 13-oz. containers for institutional use require about 12 grams of the oxide. Most packers generally combine 85% nitrous oxide with 15% carbon dioxide for both large and small aerosol dispensers.

Fluorinated Nemesis: Despite nitrous oxide's entrenchment in the broadening food aerosols market, there looms a major threat to its greater use. The nitrous nemesis may be the non-toxic, nonflammable, odorless fluorinated hydrocarbons—e.g., Freons and Genetrons (CW, Feb. 26, p. 85). The battle for outlets, however, is far from imminent. Expensive and difficult toxicity tests for human usage are yet to be conducted but if the fluorocarbons are finally labeled safe, the nitrous food market could collapse. For instance, fluorinated propellants can banish an oft-repeated consumer complaint that nitrous oxide containers

run out of pressure before the contents have been emptied.

Old-Line Prop: As the medical words in three major company names indicate, the old-line use of nitrous oxide is as an anesthetic. Today such usage is holding up in most hospitals and dental offices, and total consumption this year is expected to land in the 215-230 million gal. range (see table).

Although the anesthetic outlets will likely continue for some time to underpin the nitrous oxide market, producers happily envision a change in the food category. The lengthening list of foods that may be propelled by their product could crowd whipped cream for the top spot.



Jets Drop a Market

COMPETITION between plastics and other materials goes on unabated. In a sky-high scramble for one outlet—drop tanks (see cut) for jet aircraft—plastic's lower cost has won Britain's nod over formerly used aluminum alloys. Now in large-scale production at the Bristol Aeroplane Co., the less expensive drop tanks are being turned out in six standard sizes to fit all new British military aircraft requiring extra fuel tanks. Shown is the 77-gal. tank for the British "Sea Hawk."

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Coaxing Customers with Premiums

When Lever started offering its latest premium last week (a Scripto pen and pencil set with a Lifebuoy shaving cream tube and 79¢), it caused little excitement in the soap industry. To that group of specialties makers, premiums are "old hat."

But premiums are old hat to soapers because they've proved to be phenomenally successful sales getters. And their lack of novelty should not dissuade makers of other chemical specialties from examining the premium business, determining how it might hop the sales of their own products.

Introductions, Please: Because premiums have been particularly valuable in introducing new products, they should hold considerable interest to producers of novel chemical specialties. Indeed, it was to acquaint the public with a new specialty, Babbitt's individual soap cakes, that the first premiums, brilliantly colored chromos, were tried some 100 years ago.

Since that time, premiums have become a billion-dollar/year business. All the major soap companies, including Colgate-Palmolive, Lever and Procter & Gamble maintain premium departments. A number of other makers of soap products, toiletries and cosmetics, and household chemicals such as polishes, bleaches and cleansers have also followed suit.

It's the boast of the National Premium Advertising Assn. that it has been able to find almost no firm that has used premiums only once—invariably if they've been tried, they've been repeated, usually many times. This is true in every specialty and nonspecialty line.

Legislative Hazard: The premium business has expanded in spite of numerous legal handicaps (generally inspired by firms not using them).

Suggested laws for restricting premium use have cropped up in many areas—this year, incidentally, legislatures in some 15 states will consider premium regulations—the heaviest barrage of potential antipremium rulings since the practice was begun.

In three states, Kansas, Washington and Wisconsin, trading stamps can be redeemed only for cash. But such regulations don't affect "boxtop and 25¢" premiums.

Prize Know-How: Suppose you decide to try the premium business—how do you go about it, whom do you see, what'll it cost you?

Chances are, premiuming won't cost you anything. The day of the give-away product is fast fading; 90-95% of current boxtop premiums are "self-liquidating." (The amount the consumer sends in with the boxtop covers postage, handling, and premium cost to the offerer.) To the con-

sumer, it is still a bargain—it sells for less than he would pay at a store.

To assist a firm desiring to offer a premium, several organizations now give complete, step-by-step help. Such companies as The Reuben H. Donnelley Corp. (probably the largest in the business), Peck Premium Co., and Premium Service Co. can handle every detail of a premium campaign. That includes selection, promotion testing (to insure a premium's favorable reception, it is wise to sample some buyers for their reaction), mail handling, packaging, (see cuts) record keeping, checkup.

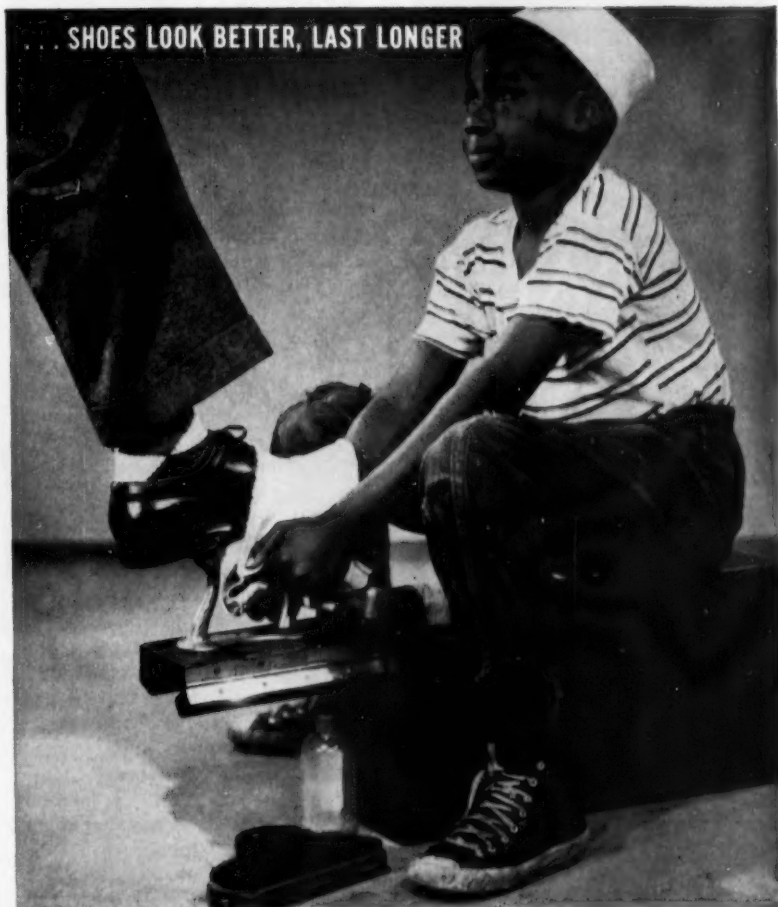
Since campaigns are often local or regional, there are mailing companies in practically every area that can and will handle details of accepting calls, filling orders, handling money, etc. These companies must know premium regulations as well as postal rules.

In quantities, the firms usually charge 3¢ for handling each 25¢ item, in addition to cost of packaging and postage (at most 6¢). Thus, the self-liquidator selling for 25¢ should not cost less than 16¢. With some companies, the scale slides a bit, for with regular campaigns, the loss on one item can be absorbed by the profit on others. The end aim of no-profit and no-loss (to the premium offerer) is maintained.

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SPECIALTIES

parent relation between cost of product and cost of premium. Once it was considered risky to ask for more than a single small coin. Now 75¢ is not an unusual amount regardless of the cost of the specialty itself, but it is still held under \$1. A cleanser selling for 15¢ can offer a 75¢ item, like silver or stockings, provided only that it has eye appeal and good value. Almost every kind of premium has enjoyed a vogue at one time or another. During the war years it was costume jewelry; in 1946-47, pressure cookers, cutlery—all scarce metal products.

Tie-in items are always good. If a product must be measured, a set of measuring spoons, or a measuring cup, goes very well. A kitchen cleanser maker once gave a plastic container that fitted no other brand. It was so well liked that the size of competitive brands was altered to fit.

Certain items always move well, like aprons, utility knives, flatware, serving items. Novelties may be good in one area, unsuccessful in another. Local habits must be considered (that's the purpose of tests). A novelty may assume gigantic proportions, or even start a fad, as cereal premiums have done with children.

Repeat Buying: There is now a well-founded and growing trend toward use of items that come in sets, such as flatware or dishes—products that require repeated product buying. One company (General Mills) has been using sets of table silver for more than 25 years, and in 1947 had a pattern designed exclusively for its use.

Just as large and small companies use premiums, so the size of premium manufacturers varies. Much of the silverware is made by International Silver Co., which, like Libbey Glass (division of Owens-Illinois Glass Co.), Ekco and Cannon Towel, has a large premium division. Costume jewelry firms like Jordan, and Coro, Inc., produce a lot of premiums. In addition, there are hundreds of other sources of items suitable for "boxtopping."

Nowadays, the public will grab as many as half a million single premiums. Testing indicates how a premium will be received; orders are generally placed with a manufacturer with the proviso that half is to be delivered by a set time, the rest if and as needed.

Variations Plus: Since self-liquidating boxtop premiums have become

one of the major segments of the premium business, they're generally the first a specialties maker considers. There are, of course, a lot of other premiums plans—the giveaway, the attached or enclosed prize, the cumulative wrapper or coupon gifts, new product samples.

In many ways, these are handled like boxtop prizes, though there are certain variations. Most of the premium service organizations can provide complete information about all plans, and a specialties maker interested in premiums might well investigate them all.

Chlorophyllized Silver

Specialties makers have been titillated in the past few weeks by news of a novel use for chlorophyll—to prevent silver and copper from tarnishing.

The news is based on work by J. E. Rhoades-Brown and E. G. Stroud, of the Chemical Research Laboratory of the Dept. of Scientific and Industrial Research (Teddington, Middlesex, England). In the course of their work to find new materials to impregnate wrappings for silver, they discovered chlorophyll-treated jeweler's paper can apparently render innocuous considerable concentrations of hydrogen sulfide.

So far, Rhoades-Brown and Stroud say, 5% by weight of the impregnant works well, and they have applied for British patents on their work. But much beyond that, the researchers prefer not to say; chlorophyll is only one of the many compounds they are testing, and until data is complete, they are loth to give more details.

Residue Request

The Food & Drug Administration has received its second request for a pesticide tolerance under rules newly promulgated by the Administration.

The application came from the U. S. Rubber Co. (Naugatuck Chemical Division), concerns its miticide, Aramite. Naugatuck asks approval of a 2-ppm. tolerance on most fruits and vegetables, a 5-ppm. level on green beans, raspberries and strawberries. FDA has 90 days to decide what tolerances can be permitted, its decision will be published in the *Federal Register*, providing plans go without a hitch.



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SPECIALTIES



ALL PHOTOS—JOHN DE CAMPI

Teen-Agers Boost Specialties

SPECIALTIES PRODUCTS make ideal items for Junior Achievement companies to manufacture, as shown in these shots taken at the trade fair climaxing National Junior Achievement Week in Chicago. Among the products offered: Never-Stuck, an antiskid agent for snow and ice containing Speed-melt. Jade shampoo and Jade deodorant; Cameo lanolin-based hand cream; Bath-Glo and Han-Glo toiletries.

The posters for some of the products were anything but subtle.

Witness the blurb for selling Pink Cloud bubble bath and hand lotion:

If you need a bath
Like most people do
Use Pink Cloud Products
For skin like new

As Diamond Alkali in Houston discovered (CW, Feb. 26, p. 32), the JA chemical companies can do a lot to recruit interest in the chemical specialties industry, develop a supply of business-trained young people. Pictures reproduced here, incidentally, are by a Junior Achievement photographer.



SPECIALTIES

Garden Aid: About set for initial operation this month is the new fertilizer plant of Great Northern Chemical Co. Ltd. (Toronto). Designed to produce an organic fertilizer from Toronto's sewage and sludge, the plant is valued at \$150,000-200,000, occupies 8000 sq. ft. The fertilizer so produced, Norco, will be sold throughout Canada.

Around the Home: Some novel specialties for consumer use:

- Pestgard (Dallas, Tex.) has marketed an insecticide-treated shelf paper. Treated on both sides with an

insecticide said to be harmless to humans, it can kill insects that cross the paper, or might otherwise breed under it. Roll (50 ft.) sells for \$1.25.

- Merit Paper & Chemical Corp. (Cambridge, Mass.) is introducing a door mat made with a compound that removes dust and dirt from shoe soles. Mat can be cleaned with a damp cloth, or with a kerosene-soaked cloth.

- Athena Products Corp. (Buffalo) is making a transparent plastic coating (sprayable) for application to wallpaper to protect it from dirt and smudging.

- Sun Chemical Co. is introducing

a new water-repellent paint designed to control water seepage in cellars and other below-grade structures.

- Davies-Young Soap Co. (Dayton, O.) is now selling Buckeye Clean-Charge, an additive for dry cleaning solvents to reduce accumulation of static electricity in garments of synthetic fibers.

- Pittsburgh Plate Glass Co.'s paint division is marketing a pale, clear alkyd resin varnish for coating wood, metal and linoleum, inside or outside use. The new varnish, Waterspar Varnish Extra Pale Clear, dries in 2½-3 hours.

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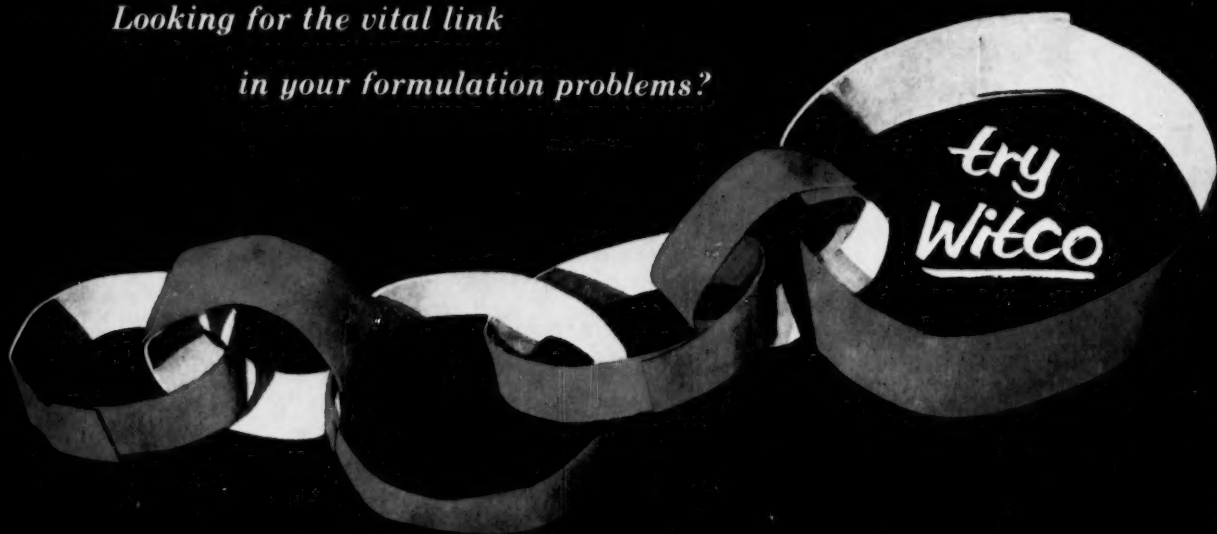
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